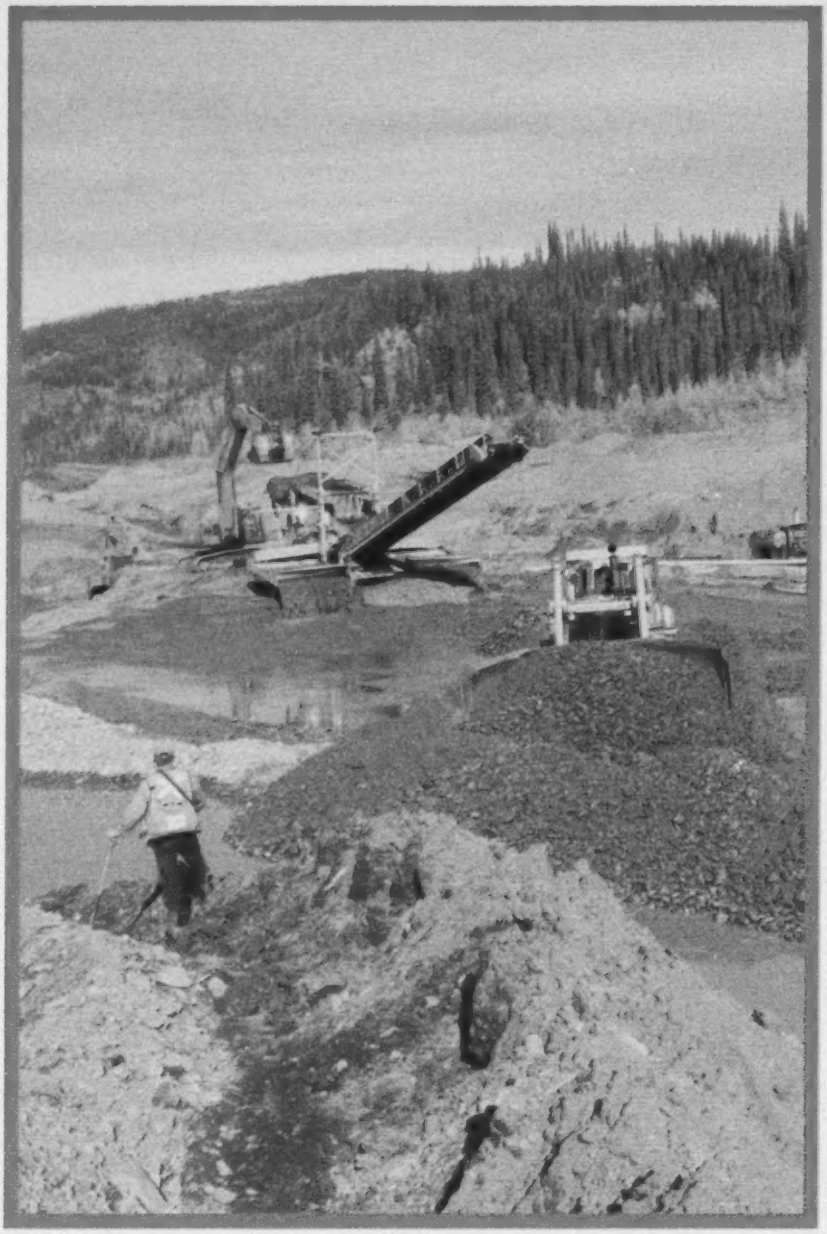
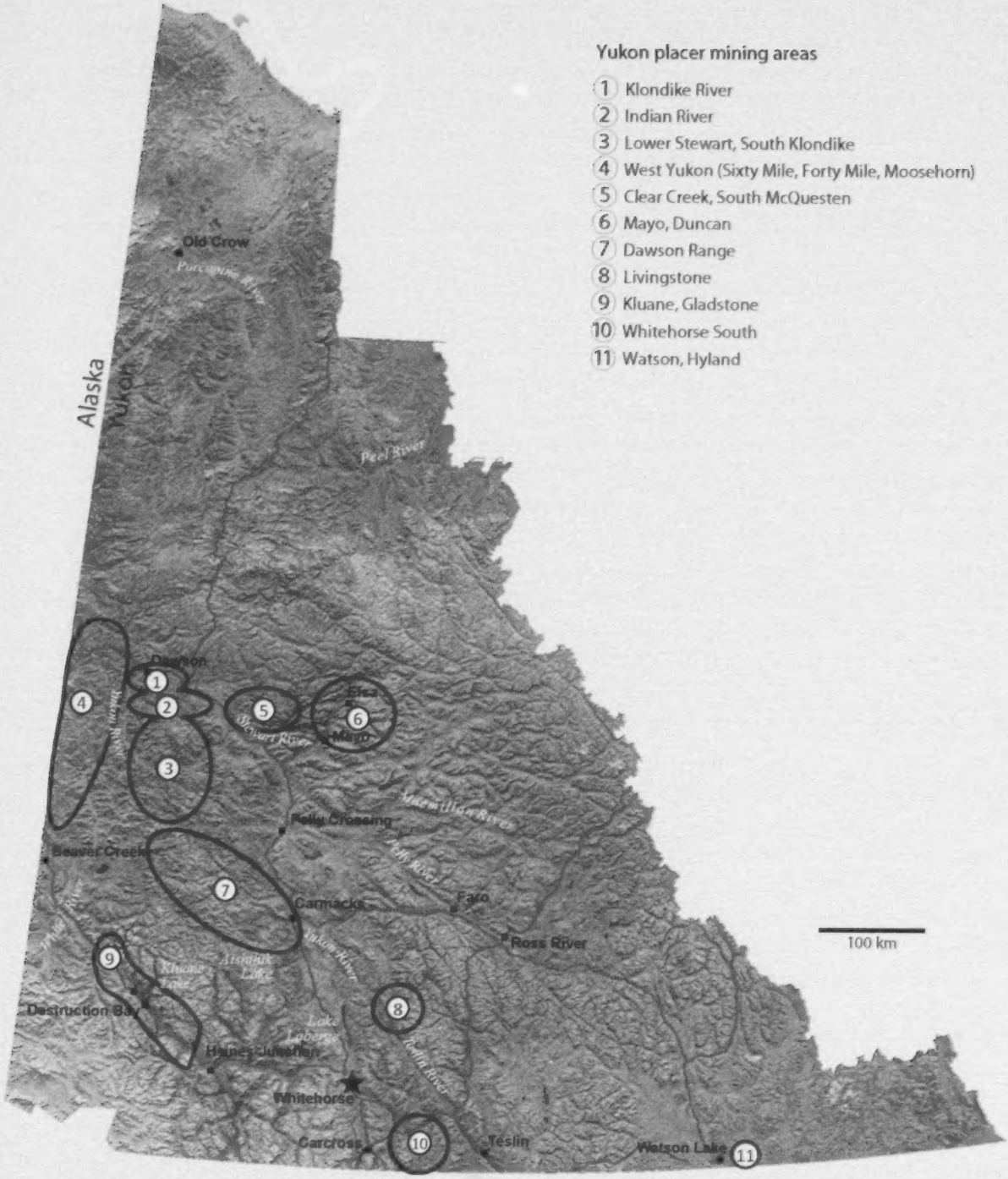


Yukon Placer Mining Industry

2010 to 2014

Yukon Geological Survey

Yukon
Energy, Mines and Resources


Yukon placer mining areas
1 Klondike River
2 Indian River
3 Lower Stewart, South Klondike
4 West Yukon (Sixty Mile, Forty Mile, Moosehorn)
5 Clear Creek, South McQuesten
6 Mayo, Duncan
7 Dawson Range
8 Livingstone
9 Kluane, Gladstone
10 Whitehorse South
11 Watson, Hyland
Alaska
Yukon
Old Crow
Porcupine River
Peel River
Dawson
Stewart River
Mayo
Klondike River
Hootalinqua River
Macmillan River
Pelly River
Pelly Crossing
Beaver Creek
White River
Carmacks
Faro
Ross River
Yukon River
Kluane Lake
Aishihik Lake
Destruction Bay
Lake Laberge
Haines Junction
Whitehorse
Carcross
Teslin
Watson Lake
100 km

Yukon **Placer Mining** Industry

2010 to 2014

Compiled by S. Van Loon and J.D. Bond

Yukon Geological Survey

Energy, Mines and Resources

Government of Yukon

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Front cover: A view upstream of H.C. Mining's operation on Henderson Creek in 2014.

Inside front cover: Yukon placer mining areas.

Inside back cover: Glacial limits map of Yukon.

Back cover: Terry Tesolin, the next generation placer miner working hard in the Mayo District.

Cover photos by Sydney Van Loon, Yukon Geological Survey.

Preface

The Yukon Geological Survey is pleased to present the Yukon Placer Mining Industry Report for the years 2010 through 2014.

During the past 5 years the Yukon Geological Survey (YGS) has undergone a number of changes. Concerning the placer industry the most important YGS change was the retirement of William (Bill) LeBarge as the Yukon Government placer geologist. Bill officially joined the private sector in August of 2012, which left a large knowledge gap at the YGS. At that time it was uncertain whether we would continue with the Placer Mining Industry Report or roll the data collection entirely into a web accessible database. After consultation with industry members it was expressed that a compilation, hard copy report, was a valuable reference document. In April 2013, we contracted Sydney Van Loon to restart the placer mining industry report. Sydney did an excellent job in her first summer and has been a welcome addition to the YGS team. As of January 2014, Sydney and I have joined forces to jointly manage the placer industry visits. While this industry report is short on details for 2010 to 2012, we hope that the extra effort made in 2013 and 2014 make up for any short falls.

Placer mining remains a strong contributor to Yukon's economy. Despite the roller coaster ride for the junior hard rock mining sector, placer mining has exhibited growth. Yukon Geological Survey is committed to seeing this industry continue to grow and is constantly asking "how can we help"? A common theme during these conversations has been "where can I find new ground". The placer industry is good at exploration near existing mine operations where logistical costs are low and discovery potential is high. In contrast, very few dollars are spent on frontier exploration in valleys with little to no previous placer history. Through the Yukon Mineral Exploration Program (YMEP) we are striving to assist projects that may produce new discoveries and give the placer industry new options. In addition, placer potential mapping is another focus and in 2012 this was completed for the Dawson Land Use Plan. Finally, exploration is only as good as the minds and tools directed at the task. To help overcome these challenges we will continue to host our annual conference. The Yukon Placer Forum has become the primary opportunity to share technological advancements, geological knowledge, and a venue that promotes communication amongst industry participants. Our goal is to continue finding ways to assist Yukon's placer industry. Our commitment to this volume is just one example and we hope you find it informative. Thank you to everyone who contributed and we look forward to seeing you on the creeks.

Acknowledgements

Collection of the data presented in this report is only possible through collaboration with the placer miners. Their report submissions, photographs, and openness during field visits is fundamental for the success of this volume. We thank the miners for all of their contributions.

Completion of the Placer Mining Industry Report is a team effort and assistance was provided by a number of Yukon Geological Survey employees. Thanks are owed to Carolyn Relf, Director of YGS, for initiating the revival of the Placer Mining Industry Report. A special thanks to Panya Lipovsky for her assistance in collecting data for the Kluane region and for her technical review of the report. Bailey Staffen was very helpful in compiling the map figures and Monica Nordling assisted with compiling the industry statistical charts and editing. Working under a tight timeline was Karen MacFarlane, Head of Technical Services and Publications Manager. Thank you Karen for completing the editorial review and layout of the publication.

Compliance Monitoring and Inspections branch, Energy, Mines and Resources contributed information and photographs which were used in the operation summaries. From 2010 to 2014 this included Lorraine Millar (Manager, Mineral Services), Terry Anderson (Chief Mining Inspector), and Natural Resources Officers, Steve Beaulieu, Sevn Bohnet, Steve Colp, Justin Hooper, Matthew Jenner, Russell McDiarmid, Johnny Nunan, Tyson Bourgard, and Lee Mierau. Special mention is owed to William and Jim Leary (Natural Resource Officers) for their strong committment to this publication.

Jeffrey Bond
Manager, Surficial Geology
Yukon Geological Survey
Energy Mines and Resources
Government of Yukon

Introduction

The 2010 to 2014 Placer Mining Industry Report is a snap shot of industry activity in Yukon. Much of the data in this volume is derived from site visits by the authors, Sydney Van Loon and Jeffrey Bond, and from survey forms completed by placer miners. Contributions were also supplied by Compliance Monitoring and Inspections branch. Due to the short time frame that this volume was pulled together there will be omissions or a lack of data on certain properties. We hope to correct this in the future and we apologize for those omissions.

In this volume you may recognize some changes. Our goal is to expand the geological and exploration information in this publication. A mining exposure is a temporary opportunity to learn and understand earth's processes and how this contributed to the evolution of placer deposits. This understanding can only help in the exploration for more placer resources. At some properties we have added a section on Exploration Potential where we elaborate on this subject. In the coming years we would also like to highlight some of the projects funded under the Yukon Mineral Exploration Program. Documenting these projects helps remind us in future years where leads were gained or frustration overwhelmed the prospector. It also helps to capture the exploration methods employed and what worked or did not work on certain ground.

One piece of information that is commonly not shared, or is shared in confidence, is gold grade. Placer miners are generally secretive about these numbers and we respect that. What we can share is that many miners are generally satisfied with ground that will pay 1 oz. of gold for every 100 cubic yards of material. This is a crude ball-park figure that equates to $14 per cubic yard at the current gold price. It should also be noted that leaner ground can be mined economically and richer ground can be mined uneconomically. Economics is largely dependent on overburden characteristics and letting the nature of the ground determine your mining method. For newcomers to the industry we suggest you pay particular attention to these details.

The summaries are arranged in the same general format as previous reports. The sections are arranged by drainage groupings, with corresponding maps and photos included.

Summary information includes creek name, its parent stream, operator name, and water license information. The coordinates given vary from year to year, especially for larger operations, but provide a general location. Where an operator moved between deposits that are found in the same general area we included these summaries in the same entry.

We hope you enjoy this report and we look forward to hearing from you about how we can continue improving the publication.

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Yukon placer mining industry, 2010 – 2014

An overview of activity and production

INTRODUCTION

The Yukon placer industry has gained renewed attention in recent years. Certainly a large part of this is driven by the sustained high gold price since 2010. In addition, between 2010 and 2012 the explosion in hard rock exploration investment had a ripple effect and every substantial placer deposit became the focus of the next lead on the mother-lode. Not surprisingly, and for better or for worse, television production companies also caught on to our unique industry. These factors have shone a light on placer mining in Yukon and the result is new miners are drifting north. Activity levels remain strong and let's hope the gold price does too. The statistics discussed in the following sections are based on datasets from 2010 to 2013. Due to the timing of this publication we felt it was premature to include 2014 data.

STAKING ACTIVITY

The number of placer claims staked increased steadily from 602 in 2010 to 1040 in 2013 (Fig. 1). Placer leases staked during that same time period remained steady at around 89 to 112 leases per year (Fig. 2). Placer claims in good standing showed a steady increase; a trend that has continued since 2004 (Fig. 3). As of 2013, 20295 placer claims were in good standing, which is the highest number in our database going back to 1973. The number of placer leases in good standing for the reporting period rose from 130 in 2010 and peaked at 217 in 2012 (Fig. 4). A decrease to 177 leases in good standing occurred in 2013, which is likely linked to claim conversion, which fueled the upswing in claims staked.

When comparing the gold price to the total miles of ground held (as claims or leases) we are seeing a general positive relationship (Fig. 5). Perhaps the more interesting trend is that the sustained high gold price has not resulted in a drastic increase in ground held. In fact, there are fewer miles of ground held now than in 1996 when gold was $386 US/oz. The main factors responsible for this discrepancy are likely related to a reduction in gold grades, resulting in less revenue dedicated to exploration and the staking of large leases, industry down-sizing resulting from the sustained low gold prices in the 1990's, a strong Canadian dollar, and high diesel prices. It takes time for a privately funded industry to rebuild itself and for newcomers to become strong producers. If this is the case then the overall trends indicate that we should expect some strong production in the coming years.

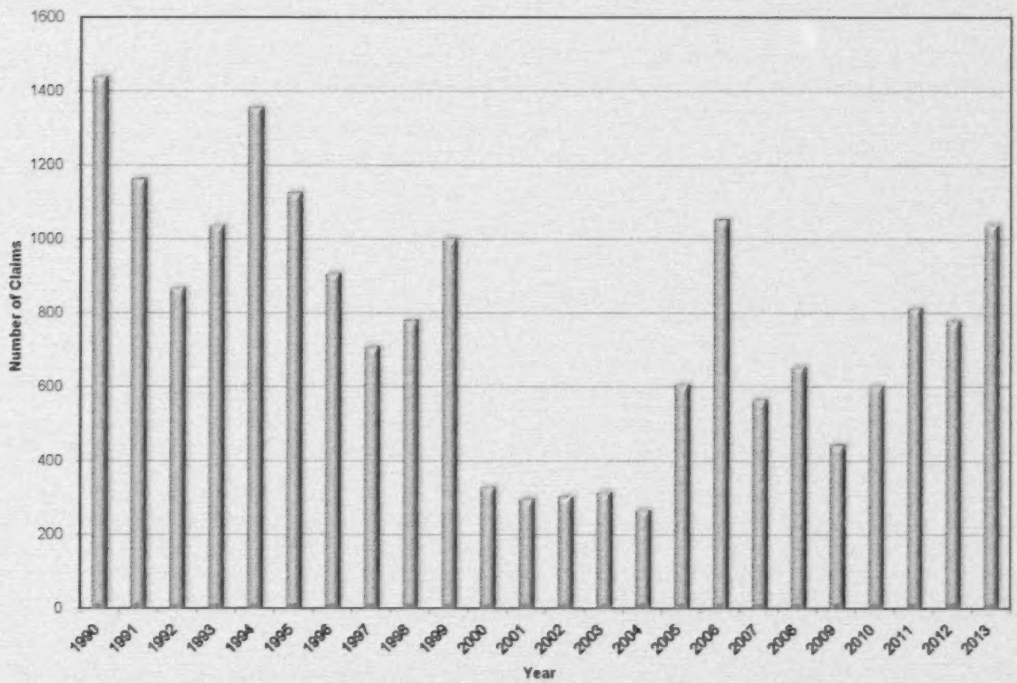


Figure 1. *Yukon placer claims staked, 1990-2013.*

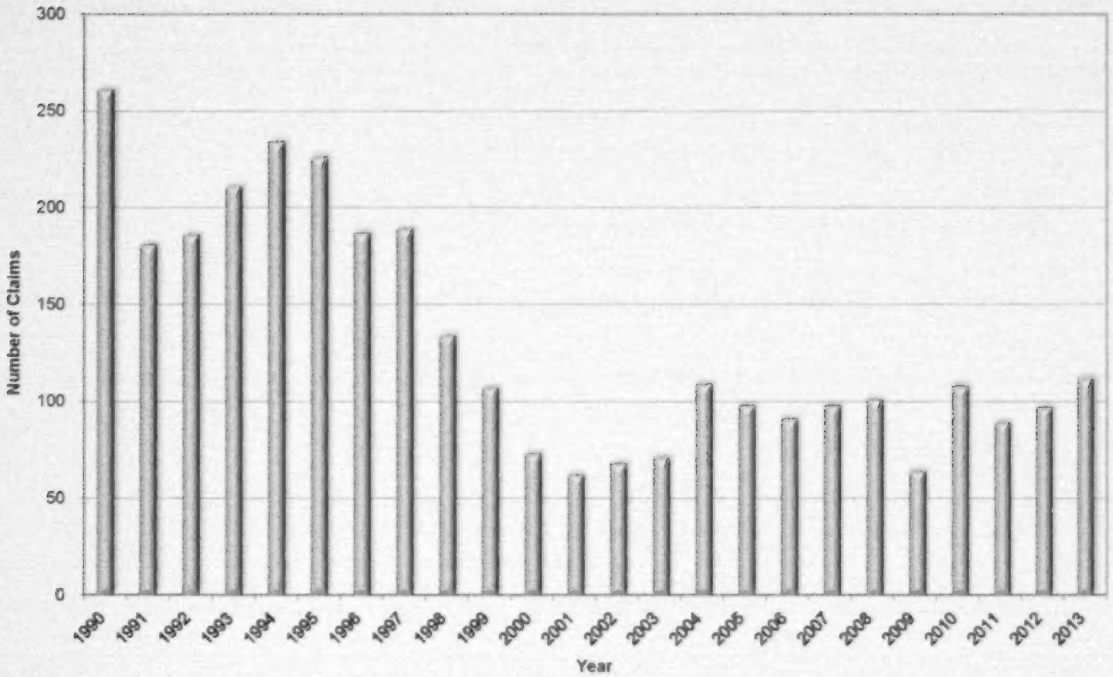


Figure 2. *Yukon placer leases staked, 1990-2013.*

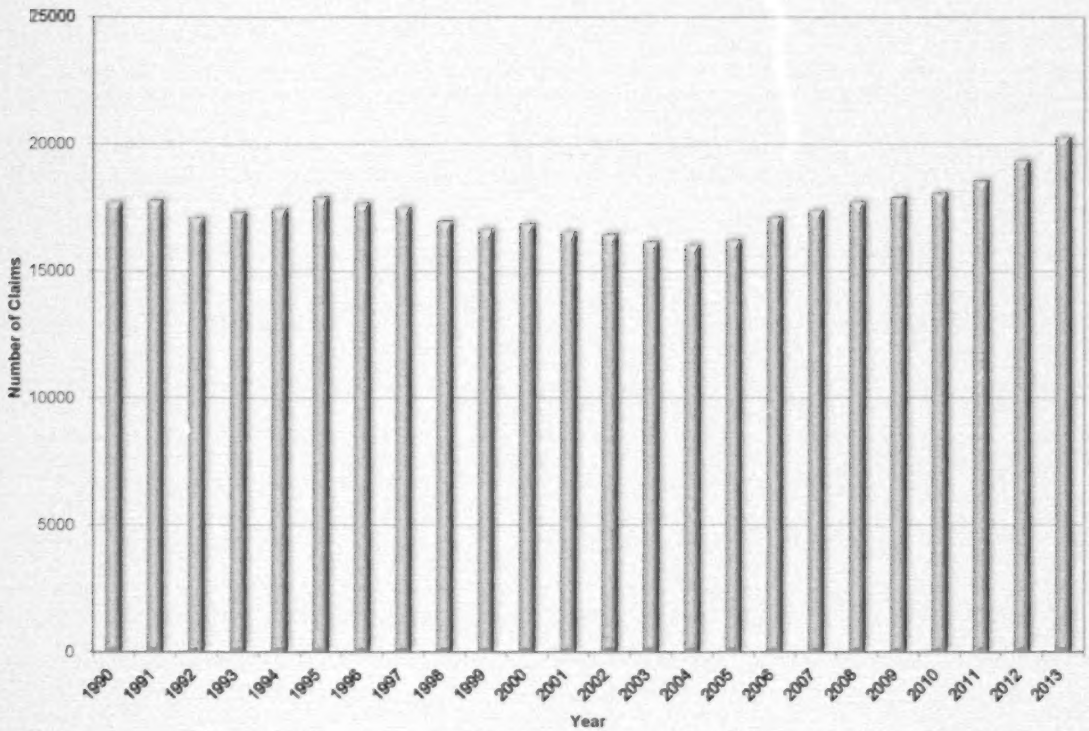


Figure 3. *Yukon placer claims in good standing, 1990-2013.*

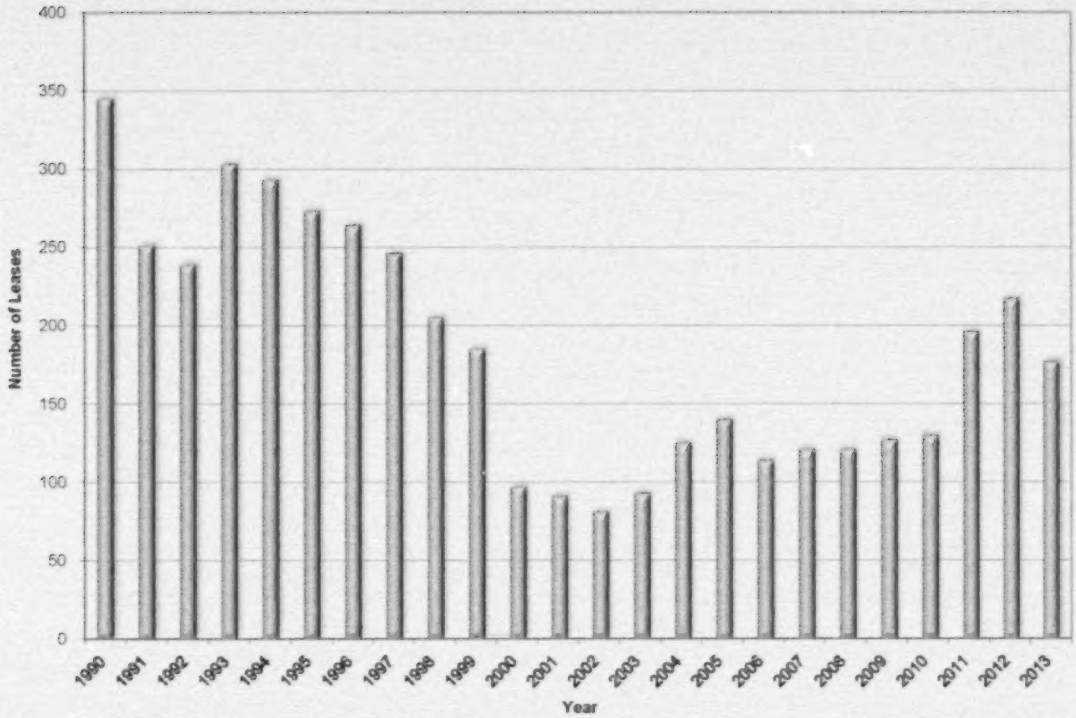


Figure 4. *Yukon placer leases in good standing, 1990 2013.*

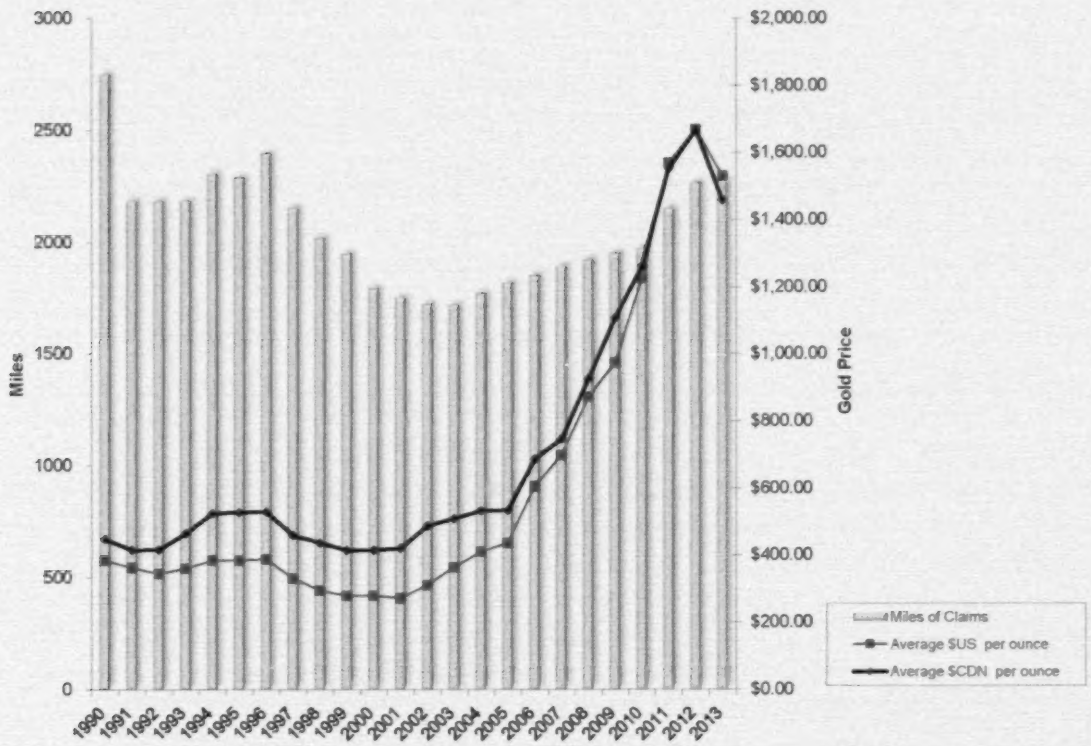


Figure 5. *Miles of Yukon placer ground held versus world gold price in US and Canadian dollars, 1990 2013.*

WORLD MARKET GOLD PRICE AND LOCAL DIESEL PRICE

Yukon placer miners have enjoyed strong gold prices throughout the reporting period (Fig. 6). In May 2010 the gold price was $1,253.98 CDN/oz and climbed to a high of $1,782.80 CDN/oz in November 2011. Even more impressively the gold price stayed above $1,500.00 CDN/oz for 22 months between July 2011 and April 2013 (Fig. 6). The average gold price in 2012 was $1,667.25 CDN/oz.

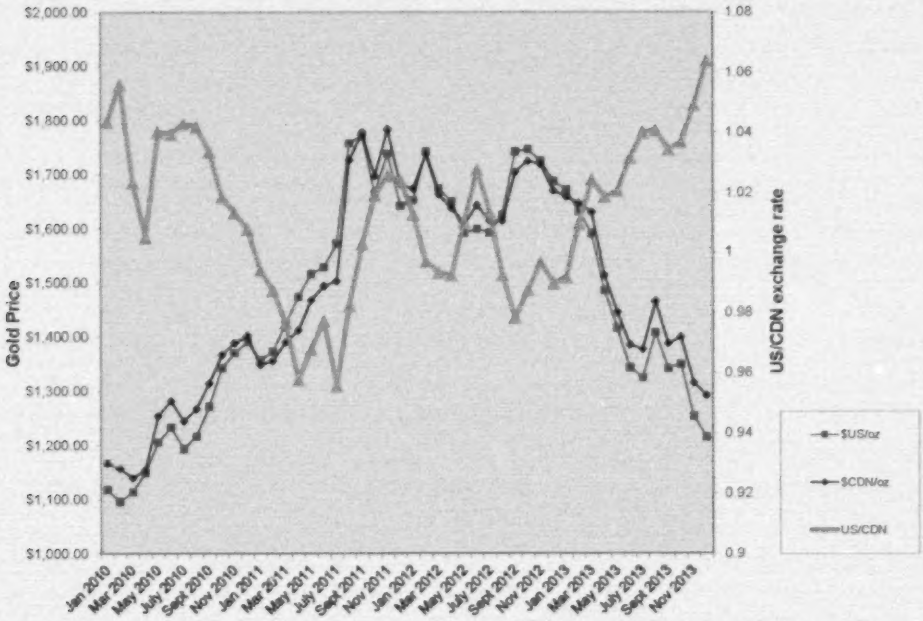


Figure 6. *Average monthly gold price in US and Canadian Dollars, and US/CDN exchange rate, 2010-2013.*

Counteracting the strong gold price has been the high local price of diesel. From 2004 to 2013 the price of diesel climbed from $0.76 per litre to $1.42 per litre in Whitehorse (Fig. 7). This fundamental cost to operate has forced placer miners to find ways to become more efficient. Common examples of this include the use of conveyors for moving overburden and increased use of articulated dump trucks.

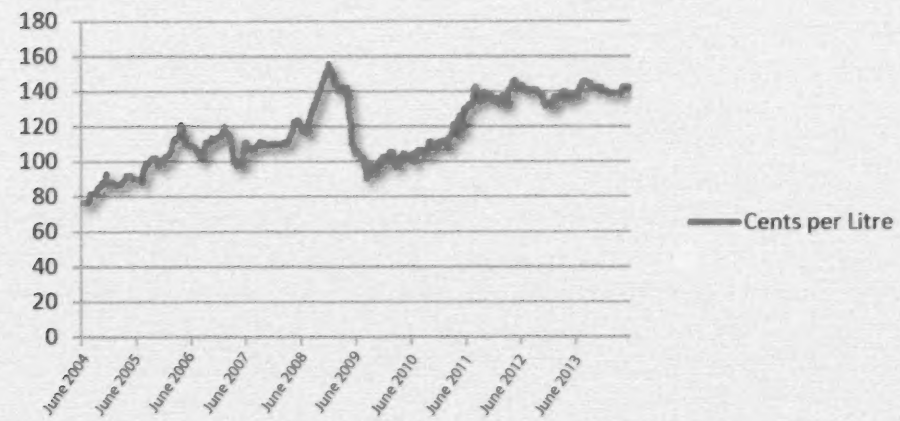


Figure 7. *Annual diesel price in Whitehorse from 2004 to 2013.*

YUKON PLACER GOLD PRODUCTION

The production figures discussed in the following section are based on royalty records submitted to the Yukon Mining Recorder. Placer gold production appears to be gaining some momentum after reaching a low in 2011 (Fig. 8). Despite the increases in the last two years the overall production is down considerably from the production highs in the mid 1990s. The production and equivalent value in Canadian dollars for the reporting period is summarized in Table 1 below.

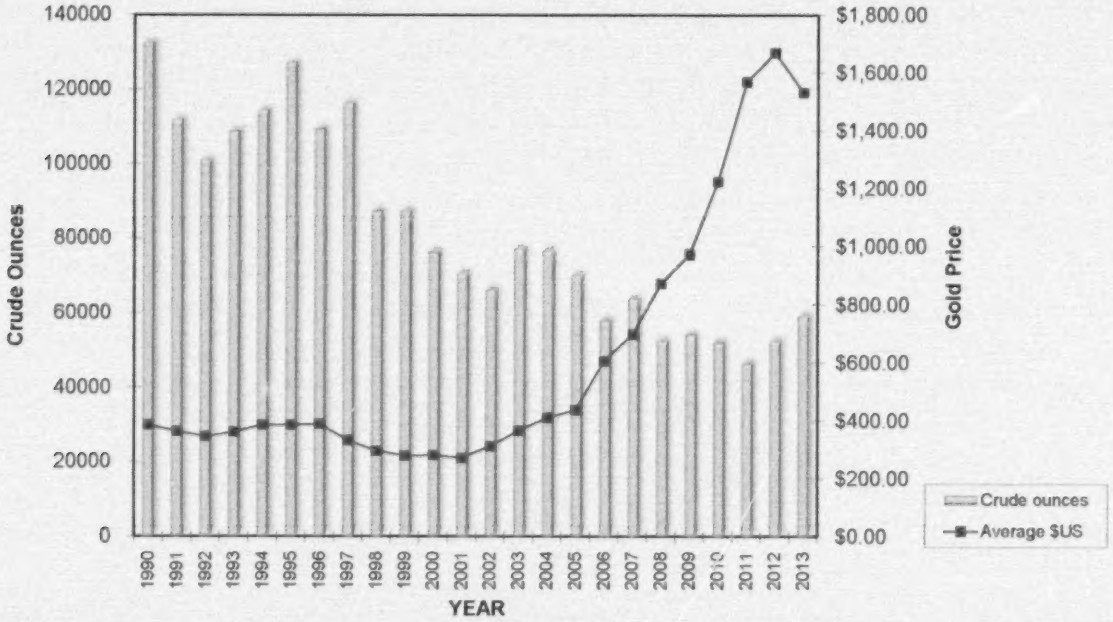


Figure 8. *Yukon placer gold production vs. US gold price, 1990-2013.*

Table 1. *Yukon placer gold production according to royalty reporting for 2010 to 2013.*

YEAR	OUNCES (crude)	OUNCES (fine@ 0.80)	VALUE (CDN)
2010	52,372	41,897	$52.8 million
2011	46,682	37,345	$58 million
2012	52,654	42,123	$70.2 million
2013	59,462	47,569	$69.4 million

The regional production during the reporting period is summarized in Figure 9. The top producing region continues to be the Indian River drainage for all four years. Impressively, Indian River drainage production increased by 7000 crude ounces or 25% from 2012 to 2013. This increase is significant and accounts for much of the production increase observed in 2013. Production increases from Quartz and Eureka creeks are largely responsible for the change. We expect this trend to continue with the restarting of the old Ross Mine on Dominion Creek by Dominion Gold Resources Ltd.

Table 2 details the production from the top 25 creeks from 2010 to 2013. Some of the more significant increases in production include Eureka Creek, Quartz Creek, Indian River, Black Hills Creek, and Clear Creek.

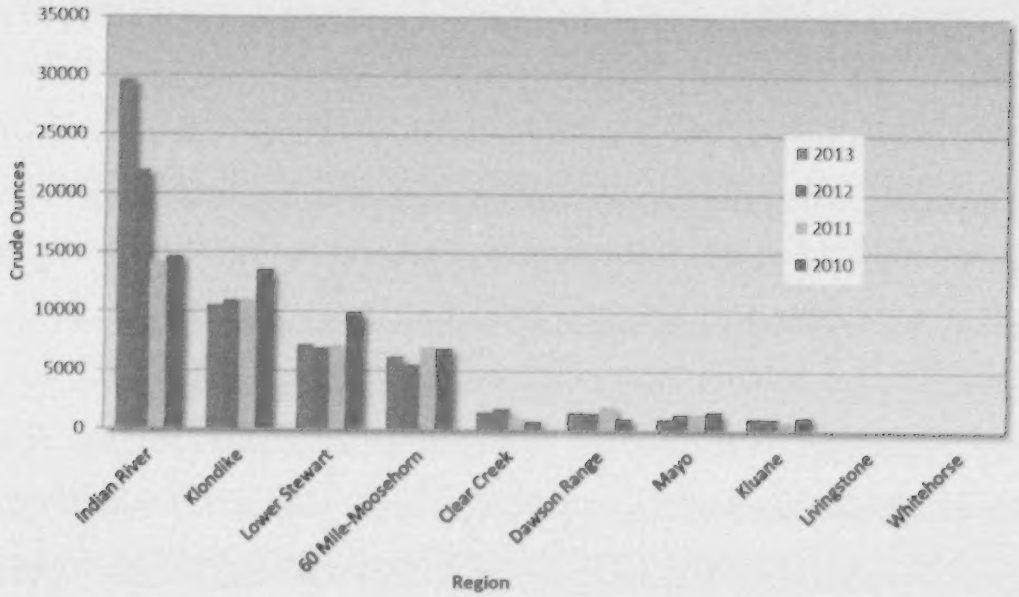


Figure 9. *Regional gold production 2010 2013.*

Table 2. *Production from the top 25 creeks in Yukon, from 2010 to 2013.*

2013		2012		2011		2010	
Indian River	8953.6	Indian	8232.0	Indian	7660.3	Hunker	6599.3
Quartz	6576.9	Hunker	4972.8	Hunker	3398.2	Barker	4665.2
Eureka	5761.6	Eureka	3553.6	Sixtymile	3333.7	Sixtymile	4359.1
Sixtymile	4223.4	Dominion	2796.9	Barker	3028.7	Indian	3999.5
Hunker	3202.9	Black Hills	2349.7	Paradise Hill	2092.9	Paradise Hill	2911.6
Black Hills	2937.7	Sixtymile	2119.4	Eureka	1740.7	Little Blanche	2885.1
Sulphur	2797.4	Quartz	2004.9	Matson	1655.4	Dominion	2815.8
Gold Run	2416.2	Prado Hill	1848.3	Dominion	1485.7	Kirkman	1772.8
Dominion	2138.9	Clear	1810.1	Gold Run	1327.1	Black Hills	1657.7
Bonanza	1854.3	Barker	1805.6	Black Hills	1264.6	Eureka	1441.5
Paradise Hill	1586.0	Gold Run	1405.9	Nansen	1143.7	Sulphur	1287.9
Clear	1543	Sulphur	1381.8	Dago Hill	1022.3	Matson	1154.6
Ballarat	1414.8	Bonanza	1233.3	Ten Mile	987.6	Last Chance	1125.8
Kirkman	653.5	Ruby Creek	1022.5	Ballarat	866.3	Gold Run	1090.2
Last Chance	597.6	Scroggie	940.6	Last Chance	861.6	Gladstone	925.4
Preido Hill	584.1	Ballarat	938.5	Little Blanche	841.5	Kate	874.7
Ten Mile	584.1	Matson	885.4	Kate	837.4	Quartz	818.5
North Henderson	550.0	Last Chance	884.2	Prado Hill	764.5	Bonanza	725.9
Burwash	549.5	Ten Mile	754.9	Clear	747.3	North Henderson	586.4
Thistle	508.3	Miller	703.4	Thistle	676.2	Nansen	563.2
Klaza River	504.3	Moose	629.5	Sulphur	639.2	Preido Hill	559.1
Various	485.4	Nansen	627.8	Henderson	603.4	Dago Hill	521.9
Thomas Gulch	483.5	Gladstone	569.5	Bonanza	582.5	Gold Bottom	509.6
Matson	457.5	Canyon	465.8	Hattie Gulch	578.2	Henderson	466.1
Allgold	406.6	Kirkman	456.8	Back	572.6	Scroggie	432.4

PLACER EXPLORATION

While it is challenging to gauge placer exploration from year to year, there appears to be an increase in activity. The majority of exploration dollars are likely spent conducting drilling and geophysics near existing mines. This primarily includes auger, reverse circulation and some sonic drilling, and typical geophysical techniques include resistivity, ground-penetrating radar, magnetometer surveys, and seismic. These geophysical methods are also commonly applied in frontier areas. In road accessible areas the preferred sampling method remains excavator test pitting and trenching. In remote sites hand shafting with the assistance of a pneumatic jack hammer or explosives is the primary method of sampling at depth.

Exploration highlights from the reporting period should also mention new production. Two significant start-ups include Rosebute Creek, a tributary to Yukon River, and Enchantment Creek, a tributary to Sixty Mile River.

In terms of grassroots exploration, a prospect discovery was found by C. Jones on Laura Creek near the Brewery Creek mine . It was discovered in 2014 during spring a shafting program and has the potential to open up a significant new area highlighted in recent placer potential mapping. Attention has also been focused east of Clear Creek and positive results have emerged from Big Creek, a tributary to the Little South Klondike River. This work was completed by S. Frizzi and included excavator test pitting with support from the Yukon Mineral Exploration Program. Further west in Tintina Trench, a new discovery is being developed near the mouth of Clear Creek. This large prospect highlights the potential in the overlooked pre-Reid glacial outwash gravel found in the Tintina Trench. Somewhat of a staking rush occurred recently at the mouth of the McQuesten River valley. This large deposit of fluvial and glaciofluvial gravel has been known to contain fine gold and will benefit from systematic exploration in coming years.

Exciting potential is also emerging from the Mount Nansen district. Much of the mining that has occurred in the area has focused on near surface post pre-Reid glaciation placer deposits. These deposits are developed on a false bedrock of glacial moraine or till. The future of the district lies in determining whether the deep pre-glacial channels can be economically exploited. This prospect will be the focus of additional Yukon Geological Survey research in the coming years.

It is well known that the future of the placer industry hinges on more exploration. The Yukon Mineral Exploration Program (YMEP) contributed $1.37 million towards placer exploration programs between 2010 and 2014. These programs have included a full spectrum of projects from hand shafting to auger drilling and excavator trenching. Awareness of the program amongst the placer industry appears to be growing and this is resulting in higher quality program proposals. For more information about the YMEP program please visit http://www.geology.gov.yk.ca/ymep.

Robert E. Leckie Awards for Outstanding Placer Reclamation

2010 award presented to Tatra Ventures

Tatra Ventures (Martin Knutson) received the 2010 Robert E. Leckie Award for Outstanding Placer Reclamation Practices. Mr. Knutson has mined at several sites in the Dawson mining district. In 2010 he mined an area between the Klondike Highway and the Klondike River adjacent to Bear Creek subdivision, whose residents were consulted prior to work beginning. The program began and finished in 2010 and the area was left in an improved state from how it was found. Only when necessary were trees removed so that the edge could be blended for a natural look.

Mr. Knutson cleaned the site of all litter and debris accumulated over time. He sloped and contoured, spreading fines stockpiled for that purpose. He constructed a swimming hole for local residents from the original pit. This depression will fill annually via seepage from the Klondike River as other dredge ponds in the area are wont to do. He left a raised trail for hiking. This trail acts as a berm to ensure that the Klondike River will no longer flood the area in spring.

A new recreation area has been created in the wake of mining.

2010 honourable mention presented to the Johnson family

The Johnson family received an Honourable Mention for Outstanding Placer Reclamation Practices in 2010. The family has been mining in the Mayo district for the last 15 years and has met all environmental challenges through modern mining practices. Their work has exceeded expectations for decommissioning their site.

Murphy's Pup had been previously mined, which created gradient related stability challenges for final channel construction. The Haggart Creek Road, a public road, regularly washed out as a result.

The Johnsons stockpiled coarse rock and top soils for restoration of the site. They armoured the channel and created a boulder spillway to protect the road at freshet. They insulated permafrost areas and sloped, contoured, and scarified before spreading fines to coax rapid re-vegetation. The road and creek have remained stable since these efforts were undertaken. The Johnson family has returned the area to a structurally sound and aesthetically pleasing landscape.

2011 award presented to Robert and Carola Young

Robert and Carola Young mine placer at Moose Creek in the Fortymile area. They consistently operate above and beyond what is expected in the steep valley. Mr. Young has stabilized the access road on and leading to his property, increasing safety and decreasing sediment loads to water and eliminating fords. He has created a stable creek channel built to very high standards that is aesthetically pleasing. Previous disturbances from other operators were also reclaimed.

Congratulations to Robert Young for his exemplary practices!

2012 award presented to Bardusan Placers Ltd.

Bardusan Placers Ltd. received the 2012 Leckie award for environmental stewardship - placer at their operation in the Mayo area. The mine operators have used careful mining practices and long-term planning to reduce noise, use less fuel, create fewer settling ponds, and systematically prepare their site for timely reclamation back to a natural environmental state.

2013 award presented to Ben Warnsby and Alex Seely

With recently acquired claims in the Dawson mining district, Mr. Warnsby and Mr. Seely addressed several unresolved environmental issues from earlier mining practices, including the removal of approximately 10 000 litres of fuel contained in degrading 45 gallon drums.

This dedication to site reclamation exceeds expectations and demonstrates exemplary environmental stewardship, benefitting the environment and setting an example for others to follow.

MEMORIUM

Kim Klippert
April 25, 1957 – September 8, 2013

The Good Man

We are never prepared to lose a friend and this was certainly the case when I learned of Kim Klippert's passing. I was in France at the time and as I grieved, I was left recounting all the good memories we had shared. I met Kim in 1996 at Highet Creek north of Mayo. He was working hard at the family mine, whereas I was a transient worker from Alberta; this was my third summer working in the Mayo-Stewart Crossing area. In 1996, Bill LeBarge with the Yukon Geology Program, hired me to map the surficial geology north of Mayo. This was my first introduction to placer mining and I didn't have a clue about expanded metal, angle iron or the mysterious hydraulic riffle. Nevertheless, I was keen to learn and apply my geological skills. After meeting Kim for the first time, it became quickly apparent that he had a keen interest in geology and always welcomed a visit to discuss placer evolution or the next best place to explore. From that summer on, our working relationship was firmly established, and out of that, a beautiful friendship also grew.

Kim moved on from Highet Creek to explore and mine other creeks in the Mayo district. These included Goodman and Davidson creeks, McNeil Gulch and the Haldane Creek area. These were challenging creeks to operate in, and the geology rather complex, but Kim recognized that those challenges also brought opportunity. At Davidson Creek, Kim had to overcome a narrow, flashy canyon with bouldery ground and a treacherous road. At McNeil Gulch, he targeted an unusual placer deposit where a stream had cut through an end moraine from the last glaciation. This was a deposit formed against the magical backdrop of the Gustavus Range, a place where Kim and his wife Cheryl would escape to for winter snowshoe adventures. In the Haldane Creek area, Kim really opened my eyes to the possibilities of placer potential in heavily glaciated valleys. While this target remained somewhat elusive, he demonstrated that even immature meltwater channels, formed off the margin of a valley glacier, could produce economic placers. Goodman Creek, a tributary to the South McQuesten River, also became a home for Kim and his family for a number of summers. He had a fondness for the Goodman Creek valley and years later after moving to the Black Hills Creek area said "I never should have left Goodman Creek".

Throughout the years, my job was primarily focused on regional surficial mapping in remote areas of Yukon. I didn't visit many placer mines during that time, but thanks to Kim's invitations, I stayed connected to the placer industry. I visited all of Kim's mining properties, and I learned a great deal about placer mining in complex glaciated terrain. Every time I drove in to meet Kim I was greeted with a smile, a joke, and a deep curiosity about the story behind his placer gold. Our shared enthusiasm for the treasure hunt will undoubtedly make those visits some of the most enjoyable days of my career.

Kim explaining his theory on the trajectory of the pay unit in Davidson Creek.

In 2008, Kim moved to Child's Gulch to try his luck in the unglaciated terrain of Black Hills Creek. As usual he was excited about the challenges and potential of a new creek. The main channel had been mined out in the lower reaches of the drainage, but a series of right-limit benches presented an opportunity.

I helped delineate the benches on an air photo and we walked the ground together trying to sort out channel flow directions, buried side pay, and the significance of old-timer workings. Late into the evenings we would unwind with a beer on his porch that was constructed strategically to offer a commanding view of the valley. These discussions always shifted towards his family, which he was immensely proud of. His children, Stephanie and Byron, had found their own path, and he took comfort in knowing that the skills they had learned from mining would always benefit them. His wife Cheryl visited the mine regularly, and although he was further from his home in Mayo, he always told me that they made it work because they were best friends.

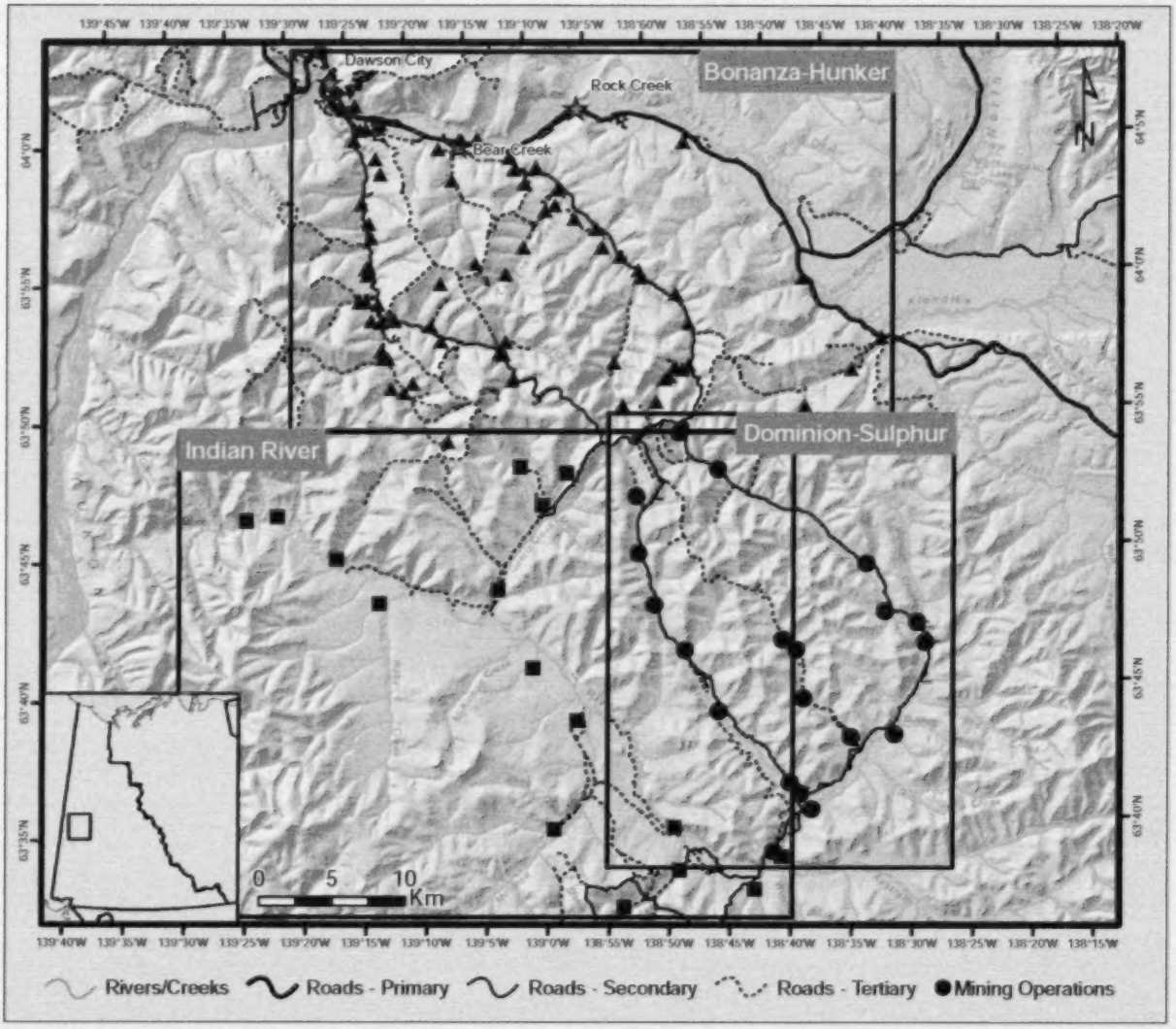
Working hard late into the season, Kim washes a test sample near the McQuesten River valley.

What inspired me most about Kim was his diversity of knowledge. Successfully operating a placer mine on your own requires many hats including heavy duty mechanic, sluice engineer and fabricator, equipment operator, and placer geologist. These skills were all interwoven into his personality and were expressed through his unique story telling ability. He could always make people laugh and that is what I appreciated most about him. His legacy resides in the many creeks he called home. Kim was a good man, a true friend of Yukon placer geology and a character that is, and always will be, truly missed.

Jeffrey Bond
Yukon Geological Survey

KLONDIKE PLACER AREAS

SITES 1 - 106



Inset maps are shown on pages 15, 61, and 79.

LEGEND

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2 ..... Vicbi Placer Inc.
3 ..... Hawkes, W.
4 ..... Northern Shoveller Resources Ltd.
5 ..... Creaven
6 ..... Brickner
7 ..... Algotsson, H.
8 ..... Kohlman Explorations Ltd.
9 ..... Harapchuk, M.
10 ..... Nibbecker, B.
11 ..... Van Bibber, S.
12 ..... LaBonte, R.
13 ..... Jackson, D.
14 ..... Bonanza Creek Mining
15 ..... Lucky Strike Ventures
16 ..... Gardiner, E.
17 ..... Daunt, I.
18 ..... 38945 Yukon Inc.
19 ..... Hanulik Enterprises Ltd.
20 ..... Arkinstall, C.
21 ..... Roberts, W.
22 ..... McMahon, T.
23 ..... Silver Fern Minerals
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29 ..... Beron Placers Ltd.
30 ..... Archibald, J.
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35 ..... Laurenson, D. and S.
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38 ..... Roberts, A. and M.
39 ..... Semple, R.
40 ..... Tatra Ventures Ltd.
41 ..... T.D. Oilfields Services Ltd.
42 ..... Henry Gulch Explorations Ltd.
43 ..... Gillespie, R.
44 ..... Australian Hill Mining
45 ..... Tatra Ventures Ltd.
46 ..... Favron Enterprises Ltd.
47 ..... Last Chance Placers Ltd.
48 ..... WAM Exploration
49 ..... Moonlight Mining Ltd.
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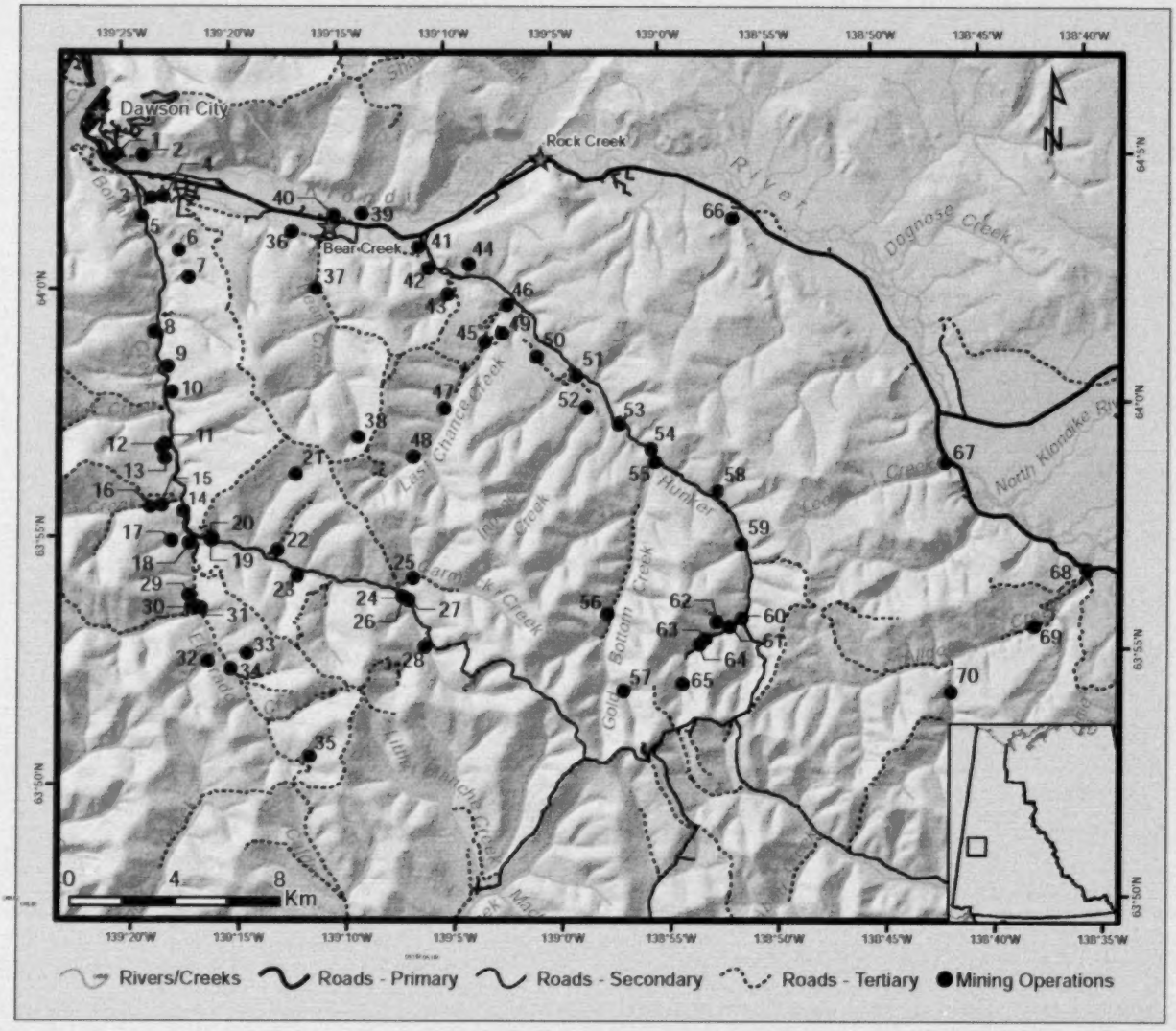
65 ..... Brong, R. and Dotzler, E.
66 ..... Up & After Placer
67 ..... Duggan, R.
68 ..... Heanry Gulch Explorations Ltd.
69 ..... Dulac Mining
70 ..... Zgela, I.

KLONDIKE:
BONANZA-HUNKER
PLACER AREA

SITES 1 - 70



Klondike, a tributary of Yukon

116B/03 2012: 64°02'51"N, 139°24'38"W

Slinky Placer Mine, 2002-2005, 2009-2014

Water License: PM09-633 (Active 2015)
Active Producer (2010-2014) **Operation no. 1**

Location Right limit bench of the Klondike River, 1.5 km downstream from Thomas Gulch.

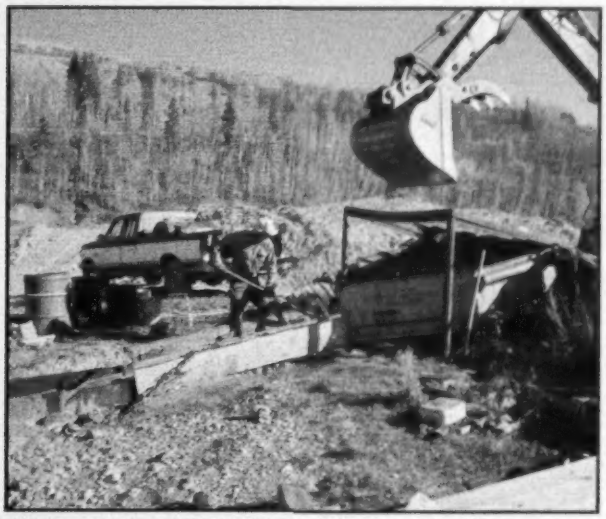
Work History and Mining Cuts Stripping occurred along the Dome Road bench below the entrance to Slinky Placer Mine in 2010. Pay was hauled to an off-site sluicing location on the Klondike Highway below the bench. Test pitting and sampling were conducted in 2011 along the Dome Road bench and stockpiled pay was sluiced at the off-site location. Work history from 2012 and 2013 is unknown and testing is the only known activity reported in 2014.

Equipment and Water Treatment A trommel wash plant was present on site in 2014. Water was 100% recycled using natural seepage.

Surficial Geology and Stratigraphy Approximately 2 to 3 m (6.5 to 10 ft) of loess overlies 10 m (32 ft) of well-stratified, imbricated, coarse cobble-gravel.

Bedrock Geology Bedrock is basalt, diorite, gabbro, and greenstone (Mortensen, 1988).

Gold Characteristics Not reported.



Active sluicing at Slinky Placer Mine in 2010. (Photo credit: Jim Leary).

Thomas Gulch, a tributary of Klondike

116B/03 2013: 64°02'53"N, 139°23'25"W

Vicbi Placer Inc., 2005-2006, 2012-2013

Water License: PM04-371 (Active 2014)
Water License: PM04-371-1 (Active 2014)
Active Producer (2012-2013) **Operation no. 2**

Location Thomas Gulch and Klondike River.

Work History and Mining Cuts The water license assignment changed from Mr. O'Brien to Vicbi Placers Inc. in 2009. No activity is reported under PM04-371 in 2010. An old shaft was backfilled on Thomas Gulch in 2011, but no mining occurred that year. Activity in 2012 included a small stripping program, construction of two settling ponds, and sluicing with a small plant on site. Mr. Carey also gained permission to conduct testing on Vicbi Placer Inc.'s ground. Stripping, sluicing, and small scale testing occurred on the north end of the property in 2013.

Equipment and Water Treatment Sluice water was pumped from an in-stream reservoir located on Thomas Gulch and was 100% recycled from a settling pond which did not discharge into the Klondike River.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, graphite-quartzite, and quartz-muscovite-calcite-schist (Mortensen, 1988).

Gold Characteristics Not reported.

Mr. Carey's wash plant on the right limit bench in 2013 (Photo credit: Jim Leary).

Bonanza, a tributary of Klondike

116B/03 2009: 64°02'02"N, 139°22'48"W

Hawkes, W., 2011

Water License: PM08-619-1 (Active 2014)
Active Producer (2011) **Operation no. 3**

Location Bench on right limit of Bonanza Creek, at dredge ponds below Jackson Hill

Work History and Mining Cuts Glacier Dredge Ltd. assigned the license to Mr. Hawkes in 2010. Mr. Hawkes conducted a one-person operation in 2011, but specific details are unknown. No mining was reported in Mr. Hawkes' 2012 annual report and the status of the operation in 2013 is also unknown.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, graphite-quartzite, and quartz-muscovite-calcite-schist (Mortensen, 1988).

Gold Characteristics Not reported.

Jackson/Lovett Hill and Klondike River

116B/03 2014: 64°02'06"N, 139°22'16"W

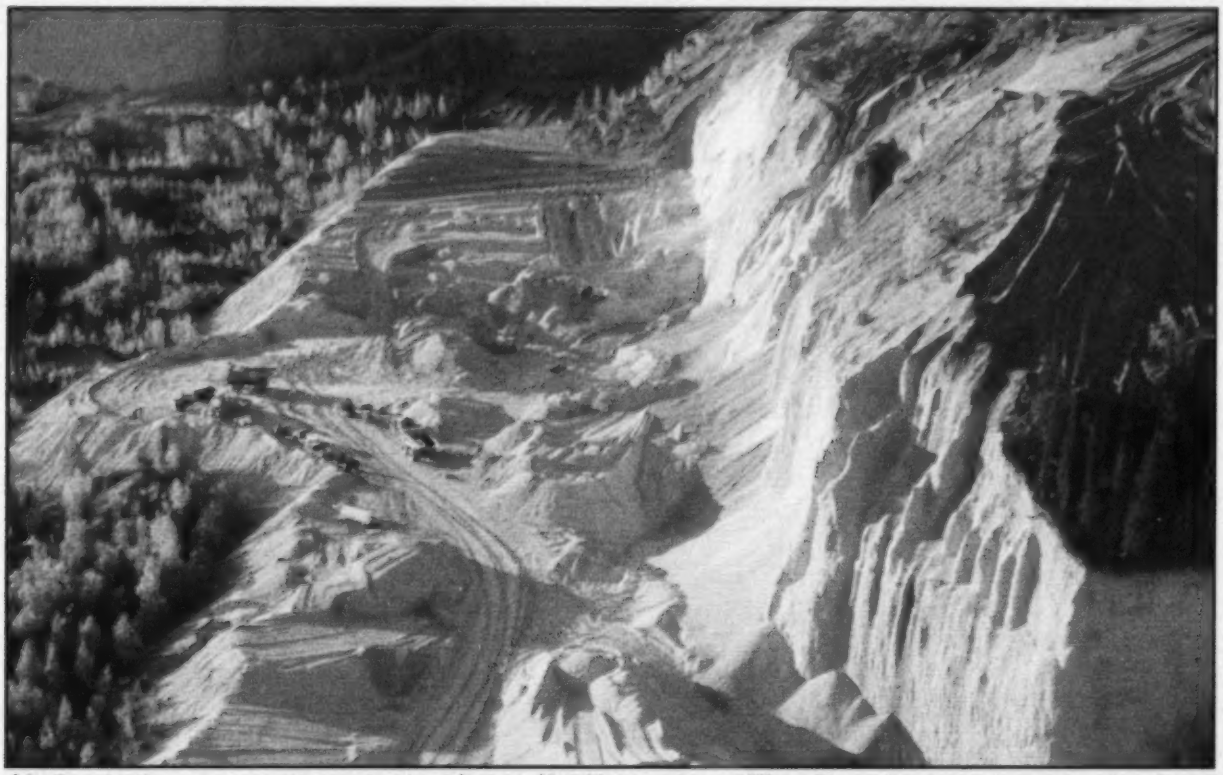
Northern Shoveller Resources Ltd., 2005-2014

Water License: PM11-018 (Active 2021)
Water License: PM12-074 (Active 2022)
Active Producer (2010-2014) **Operation no. 4**

Location Jackson Hill and Lovett Hill.

Work History and Mining Cuts In 2010, the bottom of Jackson Hill was mined in the Klondike River valley. An upper White Channel bench beside Jackson Gulch was mined in 2011. In 2012 and 2013, activity occurred on Lovett Hill, the backside of Jackson Hill. In 2014, narrow slices of White Channel gravel were mined on the upstream side of Jackson Hill. In addition, a cut was mined on Klondike River, near the base of Jackson Hill, where YCGC dredging did not reach bedrock.

Equipment and Water Treatment On the Jackson Hill claims the equipment on site in 2014 included a Caterpillar bulldozer for pushing overburden tailings and pay, a Komatsu PC200 for loading pay onto the rock truck, and rock truck for transporting pay to the sluice plant. In the Klondike River valley, equipment in 2014 included two Caterpillar 245B excavators, Samsung 350 excavator,

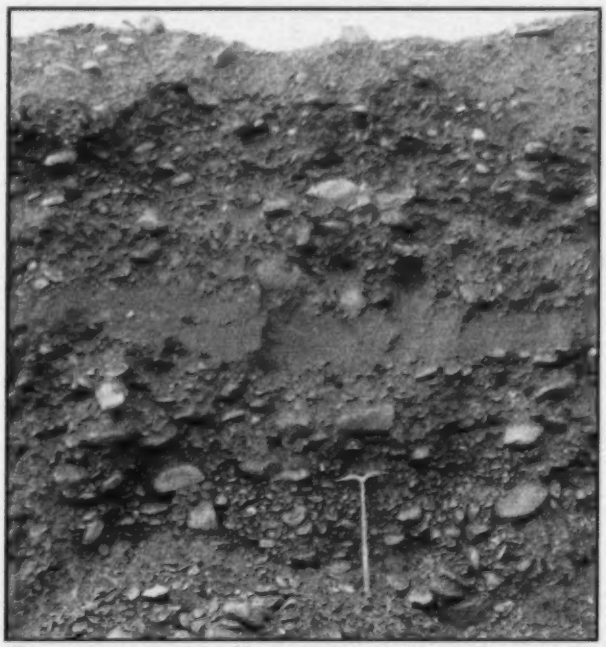


Mr. Crawford's operation on the south side of Jackson Hill. Narrow slices of White Channel pay gravel were mined at the base of the face.

Caterpillar 988B wheel loader, Caterpillar D10N and D11N bulldozers, Caterpillar D40D rock truck, three Caterpillar 773B rock trucks, and reverse circulation drill. A Derocker wash plant was used in 2014 and could process 100 loose cubic yards (76 m^3) per hour.

Surficial Geology and Stratigraphy The general stratigraphy of the Jackson Hill site includes approximately 20 m (66 ft) of Klondike wash (glacial outwash) gravel overlying 30 m (98 ft) of White Channel gravel. The lower 6.1 m (20 ft) of White Channel gravel was sluiced.

On the Klondike River the stratigraphy consists of 2.1 to 3.6 m (7 to 12 ft) of virgin Klondike River gravel overlain by 7.3 m (24 ft) of dredge tailings and fine-grained mine tailings (slickens). The Klondike River gravel is very coarse and imbricated. The clasts are fairly mature with a subrounded to rounded shape and smooth surfaces. Boulders can be as large as 35 cm. High energy channels appear on bedrock where boulders are common and the gravel contains 85% clasts. This basal gravel appears packed very tightly and is clast-rich, consistent with a high energy stream deposit. Oxidation is pervasive at the base of the section and relatively absent in the middle part of the Klondike River gravel sequence.



The gravel exposed by Northern Shoveller's operation at the base of Jackson Hill on the left limit of the Klondike River. This gravel was missed by YCGC dredging so it provides a good example of intact Klondike River gravel near Dawson. The section is about 3 m (10 ft) tall and bedrock is exposed at the base.

Overall the gravel is described as a moderately sorted pebble-cobble gravel with sand lenses. The bedrock surface undulates with a relief of 1 m (3 ft) and 0.6 to 1.5 m (2 to 5 ft) of bedrock along with 2 to 3.5 m (7 to 12 ft) of gravel was mined.

Bedrock Geology Bedrock at the Klondike River cut consists of graphitic schist, grey schist with brown weathering and listwanite alteration.

Gold Characteristics Gold is fine, with a fineness of 780 to 790 in the Klondike River valley and a fineness of 815 to 820 on the Jackson Hill bench.

Bonanza, a tributary of Klondike

116B/03 2013: 64°01'38"N, 139°23'09"W

Creaven, M., 1999, 2001, 2004, 2006, 2012-2013

Water License: PM10-037 (Active 2016)

Active Producer (2012-2013) **Operation no. 5**

Location Bonanza Creek, between California Gulch and Examiner Gulch.

Work History and Mining Cuts No work history is recorded for 2010 and 2011. In 2012, Mr. Arkinstall entered into an agreement with Mr. Creaven to operate under PM10-037. Mr. Arkinstall mined on the right limit of Bonanza Creek and conducted test drilling on the left limit. In 2013, Mr. Arkinstall planned to continue drilling on the left limit of Bonanza Creek valley. Work history is unknown in 2014.

Equipment and Water Treatment A Caterpillar D8 bulldozer, John Deere 200 excavator, and 13.7 m (45 ft) trommel were present on site in 2012. An out-of-stream reservoir and settling pond were used to supply the wash plant and handle tailings effluent.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, graphite-quartzite, and quartz-muscovite-calcite-schist (Mortensen, 1988).

Gold Characteristics Not reported.

Lovett, a tributary of Bonanza

116B/03 2014: 64°01'02"N, 139°21'14"W

Brickner, D., 2011-2014

Water License: PM04-361 (Active 2016)
Active Producer (2011-2014) **Operation no. 6**

Location Lovett Gulch, right limit of Bonanza Creek.

Work History and Mining Cuts From 2007 to 2010, Mr. Brickner mined Nugget Hill, adjacent to Independence Creek, a tributary to Hunker Creek. His operation relocated to Lovett Gulch in late 2010 and mined the right limit valley side of Lovett Gulch, continuing work here in 2011. In 2012, a 100 by 60 m (328 by 197 ft) area was stripped on the left limit of Lovett Gulch and was subsequently mined and sluiced in 2013. Throughout the 2010 to 2014 seasons he operated with two to three personnel.

Equipment and Water Treatment Equipment present on site included two Komatsu 400LCS excavators and two dump trucks. The wash plant consisted of a single deck oscillating screen with 4 ft wide by 8 ft long sluice runs with expanded metal. The capacity of the plant was 100 loose cubic yards (76 m^3) of material per hour.

Surficial Geology and Stratigraphy The right limit of Lovett Gulch consists of 10.6 to 12 m (35 to 40 ft) of White Channel gravel overlain by up to 9 m (30 ft) of silty, organic rich overburden. A maximum of 3 m (10 ft) of lower White Channel gravel was mined.

Bedrock Geology Bedrock greatly varies from graphitic and calcite schist in varying degrees of weathering to blocky quartzite.

Gold Characteristics Gold is powder and has a fineness range of 800 to 840.

Cripple Gulch, a tributary of Bonanza

116B/03 2014: 64°00'31"N, 139°20'39"W

Algotsson, H., 2013-2014

Rauguth, E., 2009-2011

Water License: PM07-584 (Closed 2013)
Water License: PM07-584-1 (Active 2018)
Active Producer (2010-2011, 2013-2014) **Operation no. 7**

Location Cripple Gulch, right limit of Bonanza Creek

Work History and Mining Cuts Minimal information is reported pertaining to PM07-584 and PM07-584-1. In 2010, Mr. Rauguth operated on the right limit bench of Bonanza Creek between Pure Gold Gulch and Cripple Gulch. Mining continued in the same location in 2011, and several drill holes were also completed at this location. In 2013, the water license was assigned to Mr. Algotsson and work was conducted on Cripple Gulch in 2013 and 2014, with no specific work history known.

Equipment and Water Treatment Equipment present in 2011 included a Hitachi UH-14 excavator, Hitachi UH-181 excavator, loader, and sluice plant.

Mr. Brickner's active cut on left limit Lovett Gulch in 2014.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, graphite-quartzite, and quartz-muscovite-calcite schist (Mortensen, 1988).

Gold Characteristics Not reported.

Bonanza, a tributary of Klondike

115O/14 2013: 63°59'20"N, 139°21'57"W

Kohlman Explorations Ltd., 1983-2007, 2011-2014

Water License: PM10-063 (Active 2021)

Active Producer (2011-2014) **Operation no. 8**

Location Bonanza Creek, approximately 900 m upstream from the mouth of Sourdough Gulch.

Work History and Mining Cuts Two miners operated on Bonanza Creek from 2011 to 2014, sluicing 120 hours a season. In 2011, Kohlman Explorations Ltd mined old timers' drifts on the left limit valley side. A large left limit cut was mined from 2012 to 2014.

Equipment and Water Treatment Equipment on site in 2013 included three backhoes, two loaders, and one rock truck. The wash plant consisted of an oscillating screen deck with sluice runs 4 ft wide by 20 ft long, able to process 40 loose cubic yards (31 m^3) per hour. Effluent was filtered through tailings and settled in a series of four settling ponds on the left limit.

Surficial Geology and Stratigraphy The section in 2013 was 3.0 to 9.1 m (10 to 30 ft) of moderately to pervasively oxidized, boulder-cobble gravel with subangular to angular clasts overlain by 0.9 m (3 ft) of stratified pebbly sand and sand, with lenses of pervasive oxidation, and 16.7 m (55 ft) of black muck. All of the Bonanza Creek gravel, which ranged from 3.0 to 9.1 m (10 to 30 ft) and up to 2.4 m (8 ft) of bedrock was sluiced.

Bedrock Geology Bedrock is quartz-muscovite-calcite schist.

Gold Characteristics Gold is fine, flat, and has a fineness of 800.

Bonanza, a tributary of Klondike

115O/14 2014: 63°58'40"N, 139°21'08"W

Harapchuk, M., 2011, 2014

Water License: PM10-075 (Expired 2021)

Active Producer (2011, 2014) **Operation no. 9**

Location Bonanza Creek, at the mouth of Fortynine Gulch.

Work History and Mining Cuts Minimal activity pertaining to PM10-075 is reported. In 2011, test pits were conducted and in 2014, stripping and monitoring occurred across from Fortynine Gulch, on the left limit of Bonanza Creek.

Upstream view of the left limit cut at the Kohlman Explorations Ltd. operation.

Equipment and Water Treatment Water was acquired from a reservoir pond and effluent was settled into an old pond.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, quartz-muscovite-calcite schist, gneiss, and amphibolite (Mortensen, 1996).

Gold Characteristics Not reported.

Bonanza, a tributary of Klondike

115O/14 2014: 63°58'09"N, 139°20'50"W

Nibbecker, B., 2014

Troberg, R. 1950-1955, 1981-1984, 1989-1992, 2006-2012

Water License: PM08-616-2 (Active 2020)

Active Producer (2010-2012, 2014) **Operation no. 10**

Location Bonanza Creek bench, opposite of Boulder Hill

Work History and Mining Cuts Mr. Troberg operated as a small, one person operation from 2010 to 2013. Mining on the left limit bench of Bonanza Creek occurred in 2010, as well as hydraulic monitoring in two areas on Boulder Creek. Monitoring on the west face of Boulder Hill continued in 2011 and sluicing commenced on Boulder Creek. Mr. Troberg continued monitoring the left limit of the valley and sluicing at the right limit of the valley in 2012. Mr. Troberg was not active in 2013 and the ground was purchased and mined by Mr. Nibbecker in 2014. Mr. Nibbecker operated on a right limit bench of Bonanza Creek, opposite of Boulder Hill and mined a cut approximately 100 m (328 ft) long by 10 m (33 ft) wide. An estimated total of 25,000 cubic yards (19114 m^3) was to be processed in the 2014 season.

Equipment and Water Treatment Equipment in 2014 included a John Deere 120C excavator, Kubota KX121-3 excavator with a 1/8 yard bucket for feeding the plant, and Caterpillar 980G wheel loader. The wash plant consisted of a shaker grizzly plant with a 4 by 4 ft hopper and 3/4" plate that screened to 3/8" and 1/4" over three sluice runs, lined with nomad matting and 1" angle iron riffles. A 6" diesel pump supplied water to the plant, allowing it to process 20 loose cubic yards (15 m^3) per hour. Water was acquired from a reservoir pond in Bonanza Creek valley and 100% recycled.

Surficial Geology and Stratigraphy The right limit Bonanza Creek bench has a bedrock elevation that is approximately 8 m (26 ft) below the bedrock elevation of the White Channel gravel exposed across the valley at Boulder Hill. This is significant because it means the right-limit bench is younger than 2.6 million years, the age when the Klondike wash was deposited on the White Channel gravel. A period of incision occurred after the Klondike Wash was deposited, that resulted in the reworking of the White Channel gravel into thinner, and potentially richer, deposits. The right-limit bench gravel is 5 m (16.5 ft) thick and is a moderately to well-sorted, stratified and imbricated, pebble-cobble gravel. The gravel is dominantly clast-supported with 70% clasts and 30% coarse sand matrix. The majority of the clasts are cobble-size although some angular boulders are present from local slide rock contributions. Iron staining from ground water flow is common in beds with porous, open-worked structures. In the upper 1 m (3 ft) of the bench gravel the quartz clast content increases noticeably and the gravel begins to fine upward from a pebble gravel to a medium-grained sand. The increase in quartz content suggests that as the bench gravel became thicker it eventually reached an elevation that was above the base of the White Channel gravel. This allowed Bonanza Creek to once again erode White Channel gravel and potentially incorporate more placer gold. An ice wedge cast is present in the sand and quartz-rich gravel, suggesting permafrost was present at the time of deposition. In terms of overburden, the bench gravel is overlain by 4 m (13 ft) of silt-rich colluvium (reworked loess) containing lenses of angular weathered bedrock fragments. The silt unit is subsequently overlain by 2 m (6.5 ft) of angular clast-rich colluvium. All of the bench fluvial gravel and 0.6 m (2 ft) of bedrock was sluiced.

Bedrock Geology Bedrock is undulating quartzite and quartz-muscovite-calcite schist.

Gold Characteristics Gold is fine, flat, bright, average 20 mesh and has a fineness of 789.

Mr. Nibbecker's bench cut in 2014, on the right limit of Bonanza Creek.

Bonanza, a tributary of Klondike

115O/14 2014: 63°57'06"N, 139°20'52"W

Van Bibber, S., 2009, 2013-2014

Water License: PM08-597 (Active 2018)
Active Producer (2013-2014) **Operation no. 11**

Location Bonanza Creek, Fox Gulch.

Work History and Mining Cuts No reported activity occurred under PM08-597 from 2010 to 2012. In 2013, work was restarted at the mine after several years of inactivity, and continued throughout 2014. Pay gravel was hauled from Fox Gulch to a plant located near the Bonanza Creek road.

Equipment and Water Treatment Equipment marshaled on the Bonanza Creek road included a Caterpillar 225LC excavator, John Deere 790 excavator, Caterpillar D8H bulldozer, Warther & Swasey excavator, and a wash plant consisting of a double screen deck.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, quartz-muscovite-calcite schist, gneiss, and amphibolite (Mortensen, 1996).

Gold Characteristics Not reported.

Bonanza, a tributary of Klondike

115O/14 2014: 63°57'02"N, 139°20'59"W

LaBonte, R., 2003-2014

Water License: PM02-298 (Active 2013)
Water License: PM13-040 (Active 2023)
Active Producer (2010-2014) **Operation no. 12**

Location Bonanza Creek, between Fox Gulch and American Gulch.

Work History and Mining Cuts Two miners were active on the north side of the left limit bench of Bonanza Creek from 2010 to 2014.

Equipment and Water Treatment Equipment included a Caterpillar 235 excavator, Caterpillar 966 loader, and rock truck. The wash plant had a 5 by 30 ft trommel that classified to 1" and discharged into a 2 by 18 ft sluice run, with expanded metal and thick mats. Three 6" pumps were used to supply the wash plant with water, allowing the trommel to process 75 loose cubic yards (57 m^3) per hour. Water was 100% recycled through a series of two ponds/reservoirs.

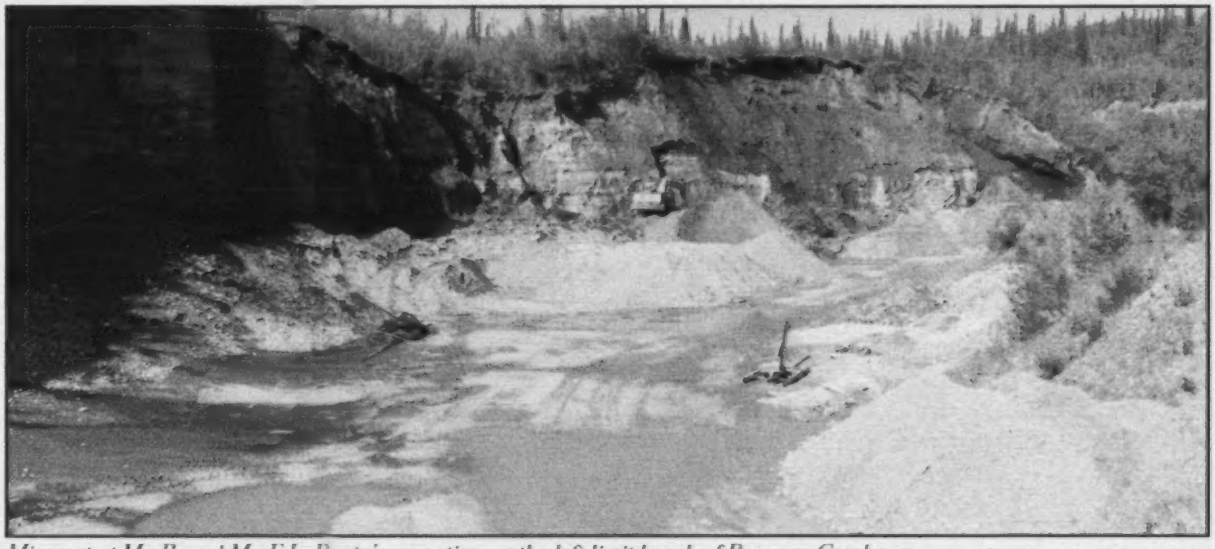
Surficial Geology and Stratigraphy The left limit bench consists of 26.6 m (87.3 ft) of White Channel gravel overlain by 4.2 m (13.8 ft) of loess. All gravel and 0.6 m (2 ft) of bedrock was sluiced.

Mr. Van Bibber's wash plant beside the Bonanza Creek road in 2014.

Bedrock Geology Bedrock is quartzite and muscovite calcite schist.

Gold Characteristics Gold is fine and 70% is under 35 mesh. The upper half of the White Channel gravel yields fine gold whereas the bedrock contact contains nuggets and coarse gold.

Trommel at the LaBonte's bench cut in 2014.



Mine cut at Mr. R. and Mr. E LaBonte's operation on the left limit bench of Bonanza Creek.

Bonanza Creek, a tributary of Klondike

115O/14 2014: 63°56'48"N, 139°20'48"W

Jackson, D., 2004-2014

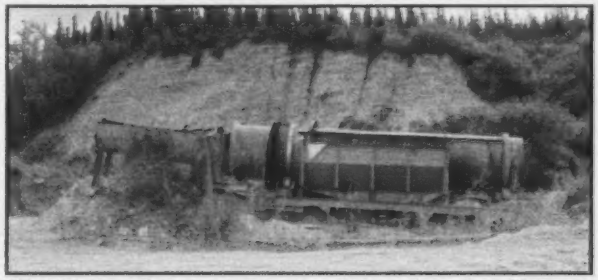
Water License: PM10-006 (Active 2020)

Active Producer (2010-2014) **Operation no. 13**

Location American Hill, left limit of Bonanza Creek.

Work History and Mining Cuts Mr. Jackson operated by himself on the left limit bench of Bonanza Creek from 2010 to 2014. In 2010, two active cuts were mined and material was sluiced as it thawed. In 2013 and 2014, he continued to mine previously worked ground on the left limit bench of Bonanza Creek, downstream from Parks Canada's Dredge #4 National Historic Site.

Equipment and Water Treatment Equipment included a Hitachi 200 excavator, Hanomag 66D loader, Caterpillar 950 loader, and Caterpillar 631B scraper. The wash plant consisted of a 6 ft diameter, 30 ft long trommel with a 1/2" screen. Sluice runs were 4 ft wide by 5 ft long over another sluice run 4 ft by 10 ft long, lined with Nomad matting and expanded metal. Water was acquired from bank seepage and 100% recycled out-of-stream, through a reservoir pond.



Wash plant at Mr. Jackson's operation on American Hill.

Surficial Geology and Stratigraphy The bench on American Hill consists of 9 m (30 ft) of White Channel gravel, of which the bottom 4.5 m (15 ft) of gravel and 1 to 1.2 m (3 to 4 ft) of bedrock was mined.

Bedrock Geology Bedrock varies from blocky andesite to decomposed chloritic schist.

Gold Characteristics Not reported.

Bonanza, a tributary of Klondike

115O/14 2014: 63°55'47"N, 139°19'39"W
115O/14 2013: 63°56'06"N, 139°19'36"W

Bonanza Creek Mining, 2002-2014

Water License: PM13-051 (Active 2024)
Active Producer (2010-2014) **Operation no. 14**

Location Bonanza Creek, Magnet Hill and Adams Hill.

Work History and Mining Cuts Adams Hill was mined in 2010 and into 2011 when the cut was completed. The remainder of the season focused on mining the right limit of Bonanza Creek at the mouth of Adams Creek, near the late Mr. Tom Walsh's cabin. A three to four person crew continued to mine the mouth of Adams Creek throughout 2012, with the addition of an extensive stripping program on the right limit. In 2013, mining occurred on the left limit of Bonanza Creek on Magnet Hill, where material was hauled from the cut to the wash plant in Bonanza Creek valley. In addition, test pits were dug on the left limit of Bonanza Creek at the mouth of Adams Creek. A crew of five miners operated a daily eight hour shift throughout 2014 and mined three different locations (a Cheechako Hill cut, sluicing old hydraulic tailings, a right limit Bonanza Creek bench, and a right limit Bonanza Creek cut) were mined.

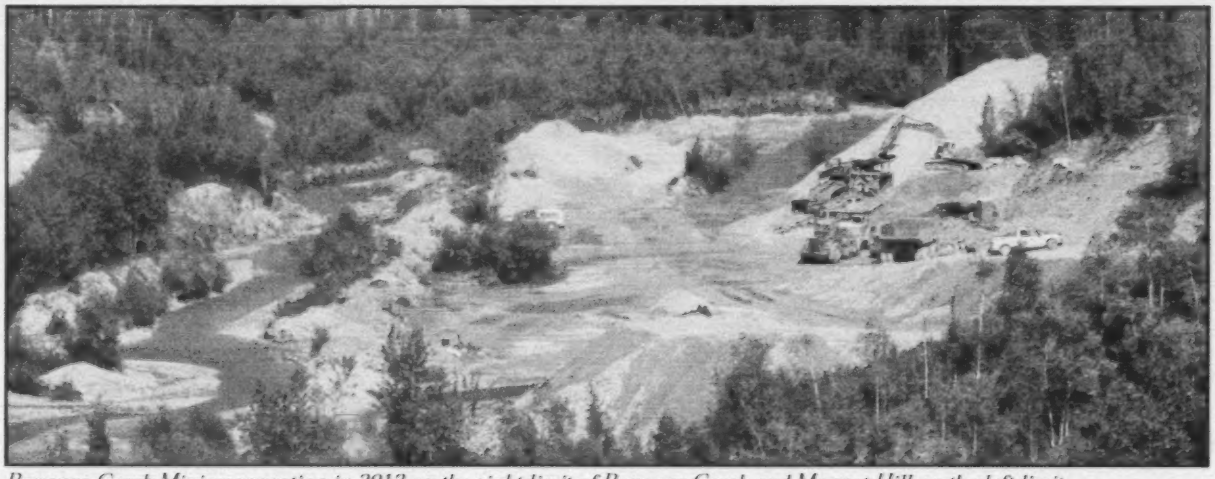
Equipment and Water Treatment Equipment present on site in 2014 included a Caterpillar 375 excavator, Komatsu 300 excavator, Samsung 280 excavator, two Halla 220 excavators, and three International 50 ton Pay Haulers. The wash plant consisted of a screen deck with two 4 ft wide by 8 ft long sluice runs with a combination of expanded metal and angle iron. Water was supplied by a 6" pump powered by a 4 cylinder John Deere pump, which enabled the plant to process 40 loose cubic yards (31 m^3) per hour. A pulsating jig was used for clean-ups.

Surficial Geology and Stratigraphy The left limit cut mined in 2013 consisted of 30 m (98 ft) of White Channel gravel on bedrock. In 2014, the Cheechako Hill cut exposed historic hydraulic tailings, of which the lowest 3.0 m (10 ft) of gravel and 0.6 to 1.2 m (2 to 4 ft) of bedrock was sluiced. The right limit bench of Bonanza Creek was a 1.8 m (6 ft) thick gravel seam, all of which was sluiced with 0.9 m (3 ft) of bedrock. A small cut on the right limit of Bonanza Creek consists of three units, starting with 3.0 m (10 ft) of gravel on bedrock, overlain by 4.6 m (15 ft) of loess, and topped by 4.6 m (15 ft) of dredge tailings.

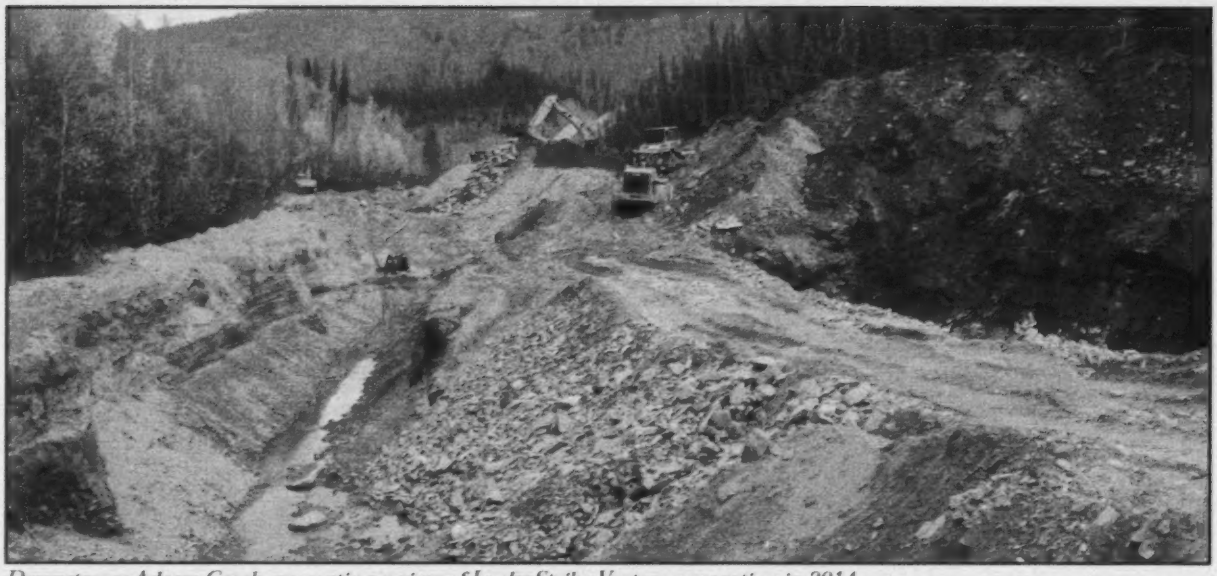
Bedrock Geology Bedrock is muscovite-schist.

Gold Characteristics Gold ranges from fine to coarse with 1% nuggets. Fineness averages 780, with a maximum of 800.

Right limit cut in 2014 at Bonanza Creek Mining.



Bonanza Creek Mining operation in 2013 on the right limit of Bonanza Creek and Magnet Hill on the left limit.



Downstream Adams Creek, presenting a view of Lucky Strike Ventures operation in 2014.

Adams, a tributary of Bonanza

115O/14 2014: 63°55'51"N, 139°20'42"W

Lucky Strike Ventures, 2012-2014

Water License: PM08-595-3 (Active 2018)
Active Producer (2012-2014) **Operation no. 15**

Location Adams Creek, lower, 900 m upstream from its confluence with Bonanza Creek

Work History and Mining Cuts In 2012, Cheechako Hill and left limit Bonanza Creek were mined. A right limit bench of Adams Creek was mined throughout 2013. A crew of two partners and two employees operated a daily 12 hour shift throughout 2014, mining a right limit cut on Adams Creek.

Equipment and Water Treatment Equipment included a Hitachi 120 excavator, Caterpillar 345 excavator, two Kawasaki 952 wheel loaders, and Caterpillar D8 bulldozer. A screen deck with 1¼" screen, able to process 70 loose cubic yards (54 m^3) per hour was used from 2012 to 2014. In late 2014, a Derocker with a 4 ft wide by 16 ft long sluice run was set up to handle the more coarse material, processing 140 to 150 loose cubic yards (107 to 115 m^3) per hour. A 6" Cornell pump powered by a 471 Jimmy engine recirculated the water throughout one large pond, in a 100% recycled system. Clean-ups were conducted using a pan and gold wheel.

Surficial Geology and Stratigraphy The right limit cut of Adams Creek exposes 1.2 m (3.9 ft) of interbedded medium sand, pebble gravel, silt organic-rich beds, and large cobbles to boulders throughout. Silty organic-rich beds and pebble gravel are isolated and discontinuous, with beds of sand and gravel. From 1.2 to 1.9 m (3.9 to 6.2 ft) is primarily silt with woody debris, and enriched with up to 2% cobble-pebble clasts. The material above 1.9 m (6.2 ft) appears disturbed and consists of tailings and slide material. Everything was sluiced, from tailings to bedrock.

Bedrock Geology Bedrock varies from blocky to highly fractured quartzite.

Gold Characteristics Gold is 75% coarse and has a fineness of 640.

Adams, a tributary of Bonanza

115O/14 2014: 63°55'48"N, 139°21'14"W

Gardiner, E., 2010-2014

Water License: PM10-051 (Active 2020)
Active Producer (2010-2014) **Operation no. 16**

Location Adams Creek, upper, approximately 1.4 km upstream from its confluence with Bonanza Creek.

Work History and Mining Cuts Activity first occurred in 2010, which consisted of drilling and test pitting with an excavator. 2014 was the first season of sluicing, with two miners and one camp personnel operating a daily 10 hour shift. A total of 500 loose cubic yards (382 m^3) was sluiced throughout the season. A cut on the left limit of Adams Creek, on virgin ground, was prepared for mining in 2015.

Upstream view in 2014 of the Gardiner's operation on Adams Creek.

The Gardiner's wash plant in 2014.

Equipment and Water Treatment Equipment included a Hitachi 270 excavator, John Deere 500C excavator, Caterpillar 966 wheel loader, John Deere 450C bulldozer, and an International fire truck for the pumps. A 6″ Gorman Rupp pump powered by a John Deere 600 engine supplied the screen deck with water through a 100% recycled system. The 2.5 by 16 ft screen deck had a 3/4″ punch plate with a 12 by 12 ft vibrating table at the end of three sluice runs, each 4 ft wide. Runs were expanded metal with an upper boil box, all lined with unbacked nomad matting. Clean-ups were conducted using a long tom and completed on a table in town.

Surficial Geology and Stratigraphy All old tailings were mined.

Bedrock Geology Bedrock muscovite-calcite schist.

Gold Characteristics Gold derived from virgin ground is coarse, with maximum size 2.5 grams.

Big Skookum Gulch, a tributary of Bonanza

115O/14 2013: 63°55'10"N, 139°20'04"W

Daunt, I., 1973-2014

Water License: PM04-409 (Active 2017)
Active Producer (2010-2014) **Operation no. 17**

Location Big Skookum Gulch, upper.

Work History and Mining Cuts Mr. Daunt has been active up Bonanza Creek since 1973, with the last decade focused on Big Skookum Gulch. He has been mining the top end of Skookum Gulch and is generally present for six to ten weeks each season.

Equipment and Water Treatment Equipment utilized on site included a Caterpillar 951 crawler loader and Caterpillar 966 wheel loader. The wash plant consisted of a small shaker with 4 ft wide by 2 ft long runs of expanded metal that tapered into a 2 ft wide by 8 ft long angle iron and expanded metal sluice run. Water was acquired from Bonanza Creek and piped to a holding pond with a diesel pump and further pumped up hill to the mine cut at the top end of Big Skookum Gulch.

Surficial Geology and Stratigraphy The stratigraphy consists of up to 30 m (100 ft) of silt overlying 0.9 to 1.5 m (3 to 5 ft) of pay gravel. Pebble gravel stockpiled at the wash plant consists of 2% boulder, 35% cobble, 63% pebble, with subangular to angular clasts, a fine grained sand and minor silt matrix, and an abundance of quartz.

Bedrock Geology Bedrock is muscovite-schist with varying degrees of weathering.

Gold Characteristics Gold is coarse and has an erratic distribution. The fineness is 660 and 80% of the non-gold fraction is silver.

Mr. Daunt's wash plant on Big Skookum Gulch in 2014.

Upper bench cut on Gold Hill in 2013.

Surficial Geology and Stratigraphy The upper bench on Gold Hill consisted of approximately 18 m (60 ft) of White Channel gravel, massive to crudely stratified pebble-cobble gravel with weakly imbricated clasts and grading throughout.

Bedrock Geology Bedrock is quartzite, quartz-muscovite-calcite schist, gneiss, and amphibolite (Mortensen, 1996).

Gold Characteristics Not reported.

Bonanza Creek, a tributary of Klondike

115O/14 2014: 63°55'10"N, 139°19'15"W

38945 Yukon Inc., 2007-2014

Water License: PM05-503 (Active 2016)
Active Producer (2010-2014) **Operation no. 18**

Location Gold Hill, at the confluence of Eldorado Creek and Bonanza Creek.

Work History and Mining Cuts Minimal work history is recorded under 38945 Yukon Inc.'s operation on Gold Hill. In 2011, the active cut was located on the left limit of Eldorado Creek and the pay was transported several hundred metres to the wash plant on Gold Hill. The face of Gold Hill at Grand Forks was stripped in 2013 and an upper bench cut on Gold Hill was mined. Mining and stripping occurred throughout 2014 but no work history is known.

Equipment and Water Treatment Equipment on site included four bulldozers, two Caterpillar excavators, a Komatsu excavator, and a rock truck. The wash plant is a skid-mounted trommel with a tailings stacker. A reservoir and out-of-stream settling pond enabled 100% recycling of water.

Bonanza, a tributary of Klondike

115O/14 2014: 63°55'15"N, 139°18'13"W

Hanulik Enterprises Ltd., 2011-2014

Water License: PM10-013 (Active 2015)
Water License: PM11-026 (Active 2022)
Active Producer (2011-2014) **Operation no. 19**

Location Bonanza Creek, upper, 50 m (164 ft) downstream from the mouth of Spring Gulch.

Work History and Mining Cuts Hanulik Enterprises Ltd. operated on the right limit of Bonanza Creek valley in 2011, below the road, where approximately (30 ft) of material had not been dredged by YCGC. In 2012, the one-person operation hauled pay dirt from the cut to a stockpile for future sluicing. The trommel was on site in 2013 and pay dirt from 2012 was sluiced. Mr. Hanulik's water license, PM11-026, on Gay Gulch was active in 2011 but work history is unknown. Sluicing occurred under PM10-013 in 2014, with activity focused on the right limit of Bonanza Creek.

Equipment and Water Treatment Equipment located on site included a Caterpillar 235 excavator, Caterpillar D9 bulldozer, dump truck, and a trommel wash plant. Water was 100% recycled.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, quartz-muscovite-calcite schist, gneiss, and amphibolite (Mortensen, 1996).

Gold Characteristics Not reported.

Bonanza, a tributary of Klondike

115O/14 2014: 63°55'18"N, 139°18'10"W

Arkinstall, C., 2009-2014

Water License: PM07-581 (Active 2018)
Water License: PM07-582 (Active 2018)
Active Producer (2010-2014) **Operation no. 20**

Location Bonanza Creek, upper, at the mouth of Spring Gulch.

Work History and Mining Cuts Mr. Arkinstall mined under Mr. Ruman's license from 2010 to 2014. Activity was present at the confluence of Spring Gulch and upper Bonanza Creek, on a small, one-claim operation in 2011. In 2013, mining consisted of stripping and sluicing, one test pit, and the construction of three settling ponds. Two miners operated a daily shift throughout 2014 mining a right limit cut at the mouth of Spring Gulch.

Equipment and Water Treatment Equipment present included a Samsung 350 excavator, Liebherr 981 excavator, Caterpillar HD 41 bulldozer, and Caterpillar 980 loader. The 6 ft diameter by 47 ft trommel screened material down to 1/2", had four 4 ft oscillating sluice runs, and a final 20 ft long sluice run. It was able to process 125 loose cubic yards (96 m^3) of gravel per hour. Water was 100% recycled in a series of three out-of-stream ponds.

Surficial Geology and Stratigraphy Gravel sluiced was a pebble-cobble gravel with a sandy matrix and subangular to angular clasts. Gravel thickness varied due to undulating bedrock contact, but sluiced material ranged from 1.8 to 3.6 m (6 to 12 ft) of gravel and 0.6 to 0.9 m (2 to 3 ft) of bedrock.

Mr. Arkinstall's trommel on upper Bonanza Creek in 2014.

Bedrock Geology Bedrock is quartzite and quartz-muscovite-calcite schist.

Gold Characteristics Gold is fine and grains average 5 to 10 mg each.

Gauvin, a tributary of Bonanza

115O/14 2014: 63°56'47"N, 139°14'38"W

Roberts, W., 1996-2014

Water License: PM13-016 (Active 2023)
Active Producer (2010-2014) **Operation no. 21**

Location Gauvin Gulch, headwaters.

Work History and Mining Cuts A two person operation was present on Gauvin Gulch from 2010 to 2012, with status in 2013 unknown. In 2011, the left limit of Gauvin Gulch was mined with plans to focus activity upstream following the pay streak eastward. The mine cut was roughly 53 m (525 yd) in length and encountered old timer shafts. Throughout the season approximately 200 cubic yards (153 m^3) was sluiced per day. No specific work history is recorded for 2012 or 2013, although Mr. Roberts and Mr. Nordling were noted as actively mining. Stripping and sluicing occurred throughout 2014, approximately 3.5 km upstream Gauvin Gulch from its confluence with upper Bonanza Creek.

Equipment and Water Treatment A five-pond settling system and one reservoir pond was built in 2011, enabling the operation to 100% recycle their water.

Surficial Geology and Stratigraphy The stratigraphic section exposed on the left limit is overlain by 1.8 m (6 ft) of organics. Unit 1 is 6.1 to 9.1 m (20 to 30 ft) thick and is composed of a clay and silt-rich cobble-gravel. Unit 2 is a rusty brown pebble-gravel and ranges in thickness from 6.1 to 9.1 m (20 to 30 ft). Both units contain approximately 2% boulders and are overlain by unit 3, a sandy pebble-gravel up to 1.8 m (6 ft) thick; unit 3 is absent in parts of the section as a whole. The contact between bedrock and unit 1 is sometimes difficult to define due to the decomposed character of the bedrock. The entire section and approximately 2 ft (0.6 m) of the decomposed bedrock were sluiced. Gold values are consistent throughout unit 1 but can sporadically spike in unit 2. (Ralph Nordling, *pers. comm.*)

Bedrock Geology Bedrock is quartzite, quartz muscovite calcite schist, gneiss, and amphibolite (Mortensen, 1996).

Gold Characteristics Not reported.

Homestake, a tributary of Bonanza

115O/14 2013: 63°55'13"N, 139°15'05"W

McMahon, T., 2012-2014

Water License: PM08-615-1 (Active 2015)
Active Producer (2012-2014) **Operation no. 22**

Location Homestake Gulch, between McKay Gulch and Gauvin Gulch.

Work History and Mining Cuts The upper most extent of mining activities in 2012 on Homestake Gulch occurred 1.5 km upstream from its confluence with Bonanza Creek. The majority of mining occurred on the left limit side. In 2013, work included stripping on the right limit, mining of side pay, and settling pond construction. Throughout 2014, side pay was mined and stripping occurred on the upper claims.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, quartz muscovite calcite schist, gneiss, and amphibolite (Mortensen, 1996).

Gold Characteristics Not reported.

O'Neil Gulch, a tributary of Bonanza

115O/14 2014: 63°54'44"N, 139°14'03"W

Silver Fern Minerals, 2013-2014

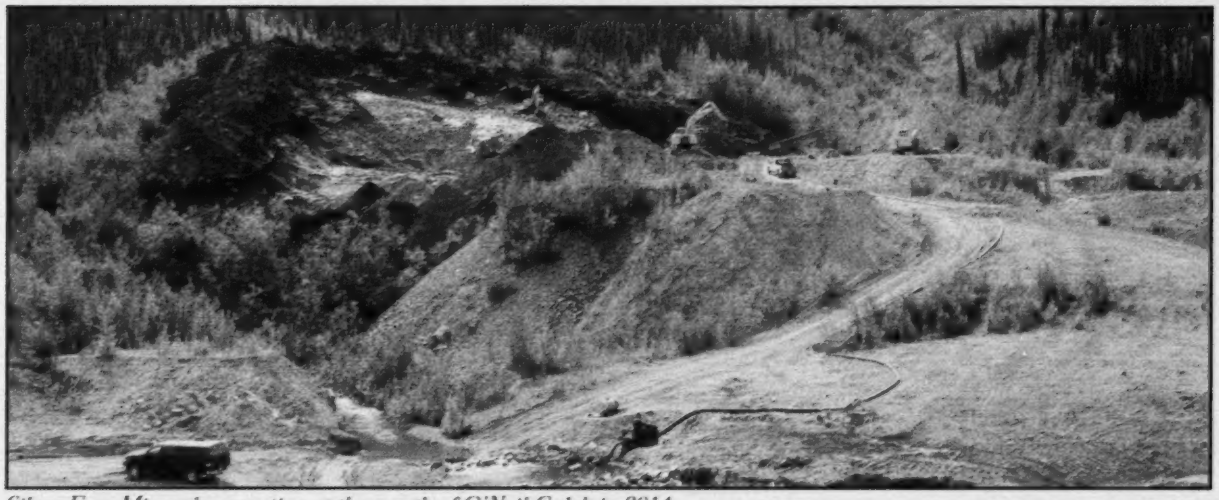
Water License: PM04-417 (Active 2015)
Active Producer (2014) **Operation no. 23**

Location O'Neil Gulch and Bonanza Creek, upper.

Work History and Mining Cuts Silver Fern Minerals leased ground from Mr. Alton in 2013 and 2014. In 2013, a test pit downstream from the mouth of O'Neil Gulch was conducted, but activity was primarily focused at the mouth of O'Neil Gulch on a left limit bench of upper Bonanza Creek. Three miners operated on the bench at O'Neil Gulch throughout 2014.

Equipment and Water Treatment In 2014, equipment present on site included a Komatsu avance PC200 excavator and two Komatsu 235 SRLC excavators. The wash plant consisted of a 4 by 6 ft hopper with a 5 ft diameter by 15 ft long trommel, with two side runs, each 4 ft wide by 6 ft long with one upper boil box and the remainder expanded metal. Effluent was settled in a series of two ponds before entering back into upper Bonanza Creek.

Surficial Geology and Stratigraphy The primary targets at the mouth of O'Neil Gulch in 2014 are located on a left limit bench of upper Bonanza Creek. Paleo-O'Neil Gulch gravel is preserved on the bench and was likely deposited as a fan where it emptied into upper Bonanza Creek. The gravel is only 1.1 m (3.6 ft) thick and is thinner at the edges of the fan deposit. The O'Neil gravel was later buried under 1 to 3 m (3 to 10 ft) of angular weathered bedrock colluvium (slide rock) and 2.5 m (8.2 ft) of retransported loess or muck. The gravel, angular colluvium, and approximately 2 m (6.6 ft) of bedrock are considered pay. Few mines in Yukon



Silver Fern Minerals operation at the mouth of O'Neil Gulch in 2014.

produce both alluvial and colluvial/eluvial placers, however they are known to occur in the vicinity of the Lone Star hard rock property, which occupies the upland between Eldorado and upper Bonanza creeks.

Bedrock Geology Bedrock is blocky to decomposed quartzite.

Gold Characteristics Gold has an angular pristine character and 90% of the gold is caught in the boil box. Pieces weighing 1 to 2 g are common and the gold grain surface appears rough and porous with rounded edges. Pyrite is common in the concentrates.

Mr. Loewen sluicing on upper Bonanza Creek.

Bonanza, a tributary of Klondike

115O/14 2014: 63°54'32"N, 139°09'04"W

Loewen, W., 2013-2014

Maller, A., 2012

Water License: PM14-002 (Active 2014)
Active Producer (2012-2014) **Operation no. 24**

Location Bonanza Creek, upper, approximately 250 m upstream from Carmack Fork.

Work History and Mining Cuts Minimal information is recorded pertaining to PM04-384 with unknown status until 2012. Stripping occurred in 2012 and continued into 2013. In 2013, the license was transferred to Mr. Loewen, who operated on the right limit of upper Bonanza Creek. Work continued throughout 2014, sluicing four hours per day in the previous year's cut, as well as a left limit Bonanza Creek cut.

Equipment and Water Treatment Equipment present in 2014 included a Caterpillar 324D excavator, Caterpillar 980 wheel loader, Caterpillar D9L bulldozer, and Volvo A35C rock truck. The wash plant was a Model 100 Gold Machine that screened to 3/4" and able to process 70 loose cubic yards (54 m^3) per hour. It had a 1.5 ft wide by 6 ft long sluice run and a 3 ft wide by 8 ft long tail sluice.

Surficial Geology and Stratigraphy The left limit Bonanza Creek cut consists of 1.8 m (5.8 ft) interbedded pebble-cobble gravel, coarse sand, and silty-organic pebble rich lenses which are often discontinuous and up to 0.6 m (2.0 ft) in thickness. Organic pods are present throughout the lower unit, as are isolated lenses of fine grained and medium grained sand. Pervasively oxidized in patches, and moderately throughout, the lower unit is a mixture of colluvium, fluvial gravels, and rip up clasts. A silty, medium to fine-grained sand with minor clasts (less than 2%) unit overlays the section 1.2 m (4 ft) thick. Material sluiced included 0.9 to 1.2 m (3 to 4 ft) of gravel and 1.8 to 2.4 m (6 to 8 ft) of bedrock.

Bedrock Geology Bedrock is interbedded quartzite and schist.

Gold Characteristics Gold is primarily 12 mesh and has a fineness of 780.

Downstream view towards Carmack Fork, at Mr. Loewen's operation in 2014.

Titan-West Explorations Inc. Derocker in 2014.

CARMACK FORK, A TRIBUTARY OF BONANZA

115O/14 2014: 63°54'56"N, 139°08'28"W

Titan-West Explorations Inc., 2011-2014

Water License: PM06-542 (Active 2017)
Active Producer (2011-2014) **Operation no. 25**

LOCATION Carmack Fork, Pup 1, Pup 2, and Flannery Pup.

WORK HISTORY AND MINING CUTS In 2011, activity recorded included sluicing and stripping on the left limit of Flannery Pup. Titan-West Explorations Inc. operated a daily 14 hour shift, with seven miners on the lower portion of Carmacks Fork in 2012. A large cut and test holes were conducted during the 2012 season. In 2013, test holes were conducted upstream from claim 12 and 13. Mining occurred approximately 800 m upstream Carmack Fork throughout 2014, where a cut 61 m (200 ft) long and 2.4 m (8 ft) deep was mined, hauling pay dirt to the wash plant downstream.

EQUIPMENT AND WATER TREATMENT Equipment present included a Caterpillar D8 bulldozer, Caterpillar 235C excavator, Caterpillar 980B loader, and 40 ton Caterpillar 730 rock truck. The Derocker wash plant had a 4 ft wide by 20 ft long sluice run with angle iron and expanded metal, processing 120 loose cubic yards (92 m^3) per hour. Water was acquired from two reservoir ponds and effluent was settled in a series of ponds downstream.

SURFICIAL GEOLOGY AND STRATIGRAPHY The bottom 2.4 m (8 ft) of gravel was considered pay, with the lower 1.2 m (4 ft) consisting of a coarser, boulder rich gravel, lacking a significant matrix composition, compared to the upper 1.2 m (4 ft) of pebble-cobble gravel with a silty-sand matrix and subangular clasts.

BEDROCK GEOLOGY Bedrock is quartzite.

GOLD CHARACTERISTICS Gold is flat and dull.

Upstream Carmacks Fork at Titan-West Explorations Inc. cut in 2014.

Bonanza, a tributary of Klondike

115O/14 2013: 63°54'32"N, 139°08'59"W

McGee, C., 2011, 2013

Water License: PM05-477 (Active 2015)
Active Producer (2011, 2013) **Operation no. 26**

Location Bonanza Creek, upper, 0.4 km upstream from Carmack Fork.

Work History and Mining Cuts Minimal information pertaining to Mr. McGee's operation is recorded. Actively mining in 2011, he operated a small scale operation on upper Bonanza Creek. Sluicing and stripping occurred throughout 2013, with work history in 2014 unknown.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, quartz-muscovite-calcite schist, gneiss, and amphibolite (Mortensen, 1996).

Gold Characteristics Not reported.

Bonanza, a tributary of Bonanza

115O/14 2013: 63°54'29"N, 139°08'45"W

6077 Yukon Ltd., 1990, 2011, 2013

Water License: PM06-515 (Active 2016)
Active Producer (2010-2013) **Operation no. 27**

Location Bonanza Creek, upper, 0.6 km upstream from Carmack Fork.

Work History and Mining Cuts Minimal work history is recorded under 6077 Yukon Ltd.'s operation from 2010 to 2013. A mining cut along upper Bonanza Creek was mined in 2010 and in 2011, Mr. Trainer set up an operation on Carmacks Fork at Flannery Pup under PM06-542. No mining is reported to have occurred in 2012 under PM06-515. The left limit of upper Bonanza Creek was mined in 2013 and no activity occurred in 2014.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, quartz-muscovite-calcite schist, gneiss, and amphibolite (Mortensen, 1996).

Gold Characteristics Not reported.

Bonanza, a tributary of Klondike

115O/14 2014: 63°53'34"N, 139°07'45"W

Danielson, S., 2013-2014

Water License: PM11-051 (Active 2020)
Active Producer (2013-2014) **Operation no. 28**

Location Bonanza Creek, upper, at the mouth of Ready Bullion Gulch. Creek

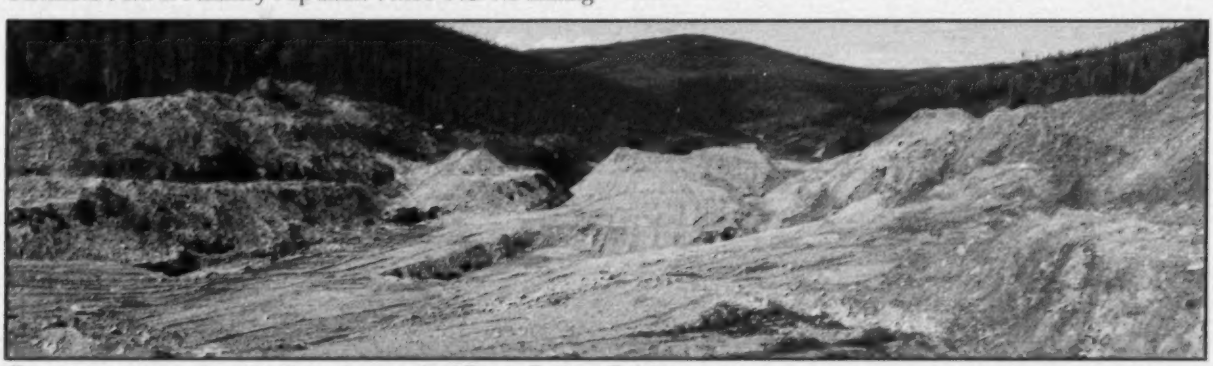
Work History and Mining Cuts In 2013, stripping occurred on the right limit of upper Bonanza. Mr. Coles sluiced material under PM11-051 in late 2013 and stripped 305 m (1,000 ft) above Ready Bullion in the spring of 2014. Mr. Danielson conducted trenching and testing in mid-2014 at the mouth of Ready Bullion Gulch.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, quartz-muscovite-calcite schist, gneiss, and amphibolite (INAC, Open File 1996-1(G)).

Gold Characteristics Not reported.



Downstream view of activity from the mouth of Ready Bullion Gulch.

Eldorado, a tributary of Bonanza

115O/14 2014: 63°54'06"N, 139°18'58"W

Beron Placers Ltd., 2010-2014

Water License: PM04-458 (Active 2015)
Active Producer (2010-2014) **Operation no. 29**

Location Eldorado Creek, approximately 0.7 km upstream from Irish Gulch.

Work History and Mining Cuts Beron Placers Ltd. primarily mined upstream, under PM05-507, on Oro Grande Gulch from 2010 to 2014. Activity occurred sporadically on the left limit bench, mining 15 291 m^3 (20,000 yd^3) in 2013. Beron Placers Ltd. reinitiated mining at this location at the end of 2014.

Equipment and Water Treatment Equipment utilized by Beron Placers Ltd. between both locations included a Caterpillar 245 excavator, John Deere 690E excavator, Caterpillar D6C and D8K bulldozers, and Caterpillar 950 and 966 wheel loaders. The wash plant on the bench consisted of a vibrating grizzly feeder, able to process 140 to 150 loose cubic yards (107 to 115 m^3) per hour. A custom fabricated trommel was also utilized during testing, which was 1.7 ft diameter by 3 ft long, with a 1/4" screen.

Surficial Geology and Stratigraphy White Channel gravel bench exposure consists of 12 m (40 ft) of interbedded cobble-pebble gravel and pebble gravel, with minimal boulders and sand lenses up to 0.2 m (0.7 ft) thick. All gravel was sluiced as testing occurred.

Bedrock Geology Bedrock is decomposed chlorite-schist.

Gold Characteristics Gold ranges from 12 to 20 mesh and varies in fineness between 660 and 750.

Bench cut upstream from Irish Gulch in 2013, at Beron Placer Ltd.

French Gulch, a tributary of Eldorado

115O/14 2013: 63°53'52"N, 139°18'47"W

Archibald, J., 1978-2014

Water License: PM10-078 (Active 2021)
Active Producer (2010-2014) **Operation no. 30**

Location French Gulch and Eldorado Creek, downstream of the mouth of French Gulch.

Work History and Mining Cuts Mr. Archibald has mined in the Klondike for 53 years and from 2010 to 2014 ran a small one person operation on French Gulch and the left limit of Eldorado Creek. In 2011, he conducted testing and mined a left limit bench of French Gulch where he hauled his pay material to his wash plant located in the Eldorado Creek valley. Continuing to mine the left limit bench in 2012, Mr. Archibald encountered numerous shafts and drifts from old timers. In 2013 and 2014, the left limit mine operations on Eldorado Creek and French Gulch were in the vicinity of the old drifts and shafts.

Equipment and Water Treatment Equipment present on site included a Komatsu excavator, Caterpillar D6C bulldozer, Caterpillar D8K bulldozer, and Caterpillar 980B loader. A reservoir pond was used and water was 100% recycled.

Surficial Geology and Stratigraphy The stratigraphic section in 2013 consisted of 10 m (40 ft) of White Channel gravel overlain by White Channel gravel-derived hydraulic tailings.

Bedrock Geology Bedrock is chlorite-sericite schist.

Gold Characteristics Not reported.

Exposure on French Gulch at Mr. Archibald's in 2013.

Eldorado, a tributary of Bonanza

115O/14 2014: 63°53'46"N, 139°18'22"W

Farley's Machine Inc., 2009-2014

Water License: PM05-484 (Active 2015)

Active Producer (2010-2014) **Operation no. 31**

Location Eldorado Creek, at the mouth of Glacier Gulch.

Work History and Mining Cuts Mining occurred on the left limit of the Eldorado Creek valley in 2010, with activity focused on the upstream claims. In 2011 and 2012, mining the right limit was the primary focus. A cut upstream from the mouth of French Gulch, on the right limit of Eldorado Creek was mined in 2013. Mr. McKinnon operated by himself and mined a cut 30 m (100 ft) wide by 76 m (250 ft) long throughout 2014.

Equipment and Water Treatment In 2014, equipment included two Caterpillar 235C excavators, Caterpillar EL300 backhoe, Caterpillar 988 wheel loader, Caterpillar 9H bulldozer, and Caterpillar D35C rock truck. The wash plant consisted of a 25 ft long trommel with a 1" screen and a 5 ft wide by 20 ft long sluice run with Hungarian riffles and nomad matting. A 5" pump powered by a Detroit 471 diesel engine supplied enough water to process 60 to 80 loose cubic yards (46 to 61 m^3) per hour. Water was 100% recycled. An oscillating mini sluice, screen, and table were used for clean-ups.

Surficial Geology and Stratigraphy Virgin Eldorado Creek gravel was exposed in 2014, downstream from the mouth of Glacier Gulch. The exposure consisted of four units. Unit 1 is a pervasively oxidized cobble-pebble gravel with 30% matrix consisting of medium sandy-silt. At 0.5 m (1.6 ft) thick, unit 1 is clast supported and contains an abundance of quartz. Clasts are oriented in a downstream direction (north). Unit 2, from 0.5 to 0.85 m (1.6 to 2.8 ft) is a pervasively oxidized pebble gravel with 50% matrix and varies between matrix and clast supported. Matrix is medium to coarse sand and granules, with a maximum clast diameter of 10 cm. Isolated pods of silt are present and up to 8 cm thick. Loess, unit 3, from 0.85 to 2.10 m (2.8 to 6.9 ft) is overlain by unit 4, consisting of dredge tailings up to 9.1 m (30 ft) thick. Up to 2.4 m (8 ft) of gravel and a minimal amount of bedrock was sluiced.

Bedrock Geology Bedrock is decomposed muscovite schist.

Gold Characteristics Gold has a fineness of 750, 50% of which is -35 mesh and 30% of which is -20 mesh.

Virgin Eldorado Creek gravels exposed in 2014 by Mr. McKinnon.

Farley's Machine Inc.'s operation in 2013, on the right limit of Eldorado Creek.

Nugget Gulch, a tributary of Eldorado

115O/14 2014: 63°52'49"N, 139°17'46"W

Schmid, B., 2010-2014

Water License: PM10-025 (Active 2020)
Active Producer (2010-2014) **Operation no. 32**

Location Nugget Gulch, between Golden Gulch and Little Eldorado Gulch.

Work History and Mining Cuts Mr. Schmid's operation evolved through 2010 to 2014, with work noted on the left limit of Nugget Gulch in 2011 and stripping upstream in 2014.

Equipment and Water Treatment Equipment present on site included a Hitachi excavator, dump truck, Caterpillar D7 bulldozer, and trommel.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, quartz-muscovite-calcite schist, gneiss, amphibolite (Mortensen, 1996).

Gold Characteristics Not reported.

Mr. Schmid's operation in 2013 on lower Nugget Gulch.

Oro Grande, a tributary of Eldorado

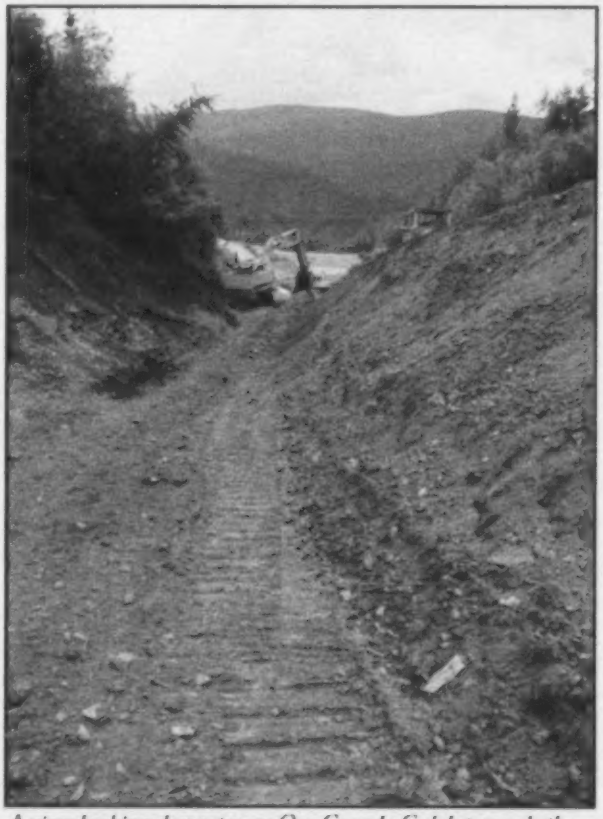
115O/14 2013: 63°53'04"N, 139°16'00"W

Beron Placers, 1991-1997, 2007-2014

Water License: PM05-507 (Active 2016)
Active Producer (2010-2014) **Operation no. 33**

Location Oro Grande Gulch, between Gay Gulch and 27 Gulch.

Work History and Mining Cuts Beron Placers mined progressing upstream Oro Grande Gulch from 2010 to 2014 and at the end of 2014, relocated to their bench operation, downstream, near Irish Gulch.



A view looking downstream Oro Grande Gulch towards the active mining area and wash plant.

Equipment and Water Treatment Equipment included a Caterpillar 245 excavator, Caterpillar D8K bulldozer, Caterpillar D6C bulldozer, and Caterpillar 950 loader. The wash plant consisted of a 5 by 12 ft vibrating screen deck with two sluice runs each 4 ft wide by 10 ft long. Sluice runs were lined with Nomad matting, expanded metal, and angle iron riffles. Water was supplied to the plant at 2500 igpm, enough to process 80 loose cubic yards (61 m^3) of gravel per hour. Water was 100% recycled in a series of three reservoir and six settling ponds. A long tom and a riffle table were used for clean ups.

Surficial Geology and Stratigraphy The upper most exposure on Oro Grande Gulch consists of 3.6 m (12 ft) of colluvium comprised of cobble sized clasts with silty-sandy matrix and angular to subangular clasts. All gravel and up to 0.9 m (3 ft) of bedrock was sluiced.

Bedrock Geology Bedrock is quartzite and schist.

Gold Characteristics Gold is rough and angular with a fineness of 700.

Eldorado, a tributary of Bonanza

115O/14 2014: 63°52'42"N, 139°16'39"W

Rodal Placers, 2011-2014

Water License: PM10-076 (Active 2021)

Active Producer (2011-2014) **Operation no. 34**

Location Eldorado, between Gay Gulch and Oro Grande Gulch.

Work History and Mining Cuts Mr. Dewell and Mr. Kulych first operated on Eldorado Creek in 2011 where they conducted manual testing. In 2012 and 2013, they focused on previously mined ground on the left limit. This included stripping the left limit hillslope in 2013. Mining continued downstream throughout 2014, on both the left and right limits.

Equipment and Water Treatment A Hitachi 270 excavator, John Deere 200LC excavator, Caterpillar D8K bulldozer and a Caterpillar D25C rock truck were present in 2014. The wash plant, which is able to process 35 loose cubic yards (27 m^3) per hour, consists of a 4 ft diameter by 16 ft long trommel. They have an out of stream reservoir and a system of two out-of-stream settling ponds.

Surficial Geology and Stratigraphy The section exposed in 2013 consists of 1.5 to 4.9 m (5 to 16 ft) of pervasively oxidized, matrix-supported, cobble-pebble gravel. The clasts were angular and predominately composed of pebbles in a medium to coarse-grained sandy matrix. All of the gravel, in places up to 4.9 m (16 ft), and up to 0.6 m (2 ft) of bedrock was sluiced.

Bedrock Geology Bedrock is highly fractured, chloritic, quartz-rich schist, in varying degrees of decomposition.

Gold Characteristics The gold is rounded and flat and grains are 2/3 fine and 1/3 coarse.

Downstream view in 2014 of the Rodal Placers operation on Eldorado Creek.

Chief and Heaven, tributaries of Eldorado

115O/14 2013: 63°51'07"N, 139°12'34"W

Laurenson, D. and S., 2010-2013

Water License: PM09-652 (Active 2020) AP09652 LP00710

Active Producer (2010-2013) **Operation no. 35**

Location Chief Gulch and Heaven Gulch.

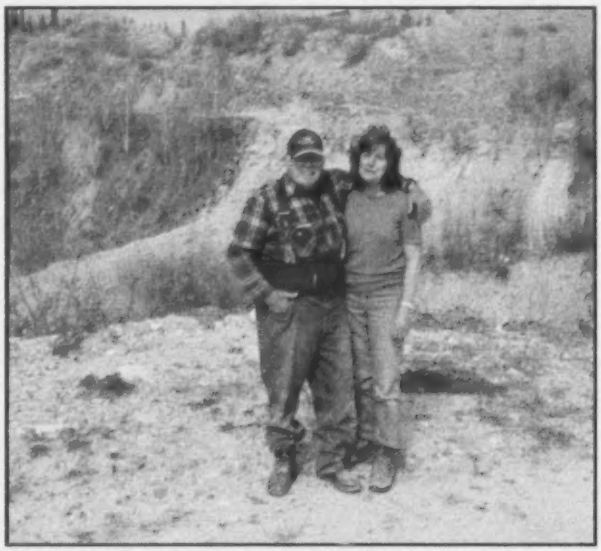
Work History and Mining Cuts Mr. and Mrs. Laurenson mined under Mr. Rauguth's liscense (PM09-652) from 2010 to 2013 on an unnamed tributary of Chief Gulch. In 2010, drilling was completed on both limits of Heaven Gulch that directed the mining program of 2011. In 2012 and 2013, stripping was conducted on the left and right limits of Heaven Gulch.

Equipment and Water Treatment Equipment on site included two Caterpillar D8 bulldozers, a Caterpillar 225LC excavator, a drill, and an oscillating double screen deck with two 2.5 ft wide by 8 ft long sluice runs. The wash plant was able to process 50 cubic yards (38 m^3) of gravel per hour and water was 100% recycled.

Surficial Geology and Stratigraphy The stratigraphic section consists of 9.1 to 10.7 m (30 to 35 ft) of black muck overlying 1.5 m (5 ft) of gravel. All of the gravel and 0.9 m (3 ft) of bedrock was sluiced.

Bedrock Geology Bedrock is quartzite, quartz-muscovite-calcite schist, gneiss, and amphibolite (Mortensen, 1996).

Gold Characteristics Gold is very fine.



Sarah and Dave Laurenson in 2014 (Photo credit: Jim Leary).

KLONDIKE, A TRIBUTARY OF YUKON RIVER

116B/03 2013: 64°01'40"N, 139°16'06"W

Brown, C., 2010-2014

Water License: PM05-502 (Active 2015)
Active Producer (2011-2012) **Operation no. 36**

LOCATION Klondike River, between Bear Creek and Deadman Gulch.

WORK HISTORY AND MINING CUTS In 2011 and 2012, Mr. Alton operated under Mr. Brown's permits and licensing, 360 m (1,200 ft) below the mouth of Bear Creek. Five miners and one camp personnel operated a daily 11 hour shift in 2012 and mined one cut 76 by 91 by 5.5 m (250 by 300 by 18 ft).

EQUIPMENT AND WATER TREATMENT Equipment included a Hitachi EX400 excavator, Hitachi EX200 excavator, Caterpillar D9H, Volvo L220E loader, and two Caterpillar D400E rock trucks. A two deck screen plant that screened to 1/2" minus, over expanded metal and mats, with two boil boxes and hydraulic riffles processed 70 to 80 loose cubic yards (53 to 61 m^3) per hour. Water acquired from an old dredge pond was supplied at 1200 igpm by a 6 by 6" Indeng pump that was powered by a Izuzu engine. Effluent was treated out of stream and 90% recycled by filtering water through dredge tailings and back into the pump pond. A long tom over two cell jigs were used during clean up and fines were put through a 0.9 m (3 ft) wheel.

SURFICIAL GEOLOGY AND STRATIGRAPHY The section mined in 2011 and 2012 consisted of 3.6 to 6.1 m (12 to 20 ft) of stratified and cross-bedded Klondike River gravel with large cobbles at the bedrock contact. The gravel is overlain by 1.2 to 2.4 m (4 to 8 ft) of mud and organics. The sluiced section included 1.2 to 1.5 m (4 to 5 ft) of gravel and 0.3 to 1.2 m (1 to 4 ft) of bedrock.

A view of Mr. Brown's left limit Klondike River exposure below Bear Creek. Virgin Klondike River gravel is preserved in this area due to the high bedrock (relatively thin gravel), which was problematic for the dredge to mine. Bedrock is exposed in the base of the cut. This section is 4.5 m (15 ft) in height.

BEDROCK GEOLOGY Bedrock is quartzite, graphitic-quartzite, and quartz muscovite-calcite schist (Mortensen, 1988).

EXPLORATION POTENTIAL Based on resistivity and limited drill testing, the bedrock surface on the left limit of Klondike River drops towards Deadman Gulch. While deeper ground requires more overburden removal expense it may also prove to contain higher concentration of gold because sustained fluvial activity is required to cut the lower surface. In addition, outflow from Deadman Gulch may add additional placer gold. Reverse circulation or churn drilling and resistivity surveys are recommended.

GOLD CHARACTERISTICS Gold is angular, rough, spongy, crystalline, very dirty, and stained, with some covered in red oxidized material. Size consisted of 10% +10 mesh, 17% -10 mesh to +16 mesh, and 73% -16 mesh. Fineness ranged from 650 to 660.

BEAR, A TRIBUTARY OF KLONDIKE RIVER

116B/03 2014: 64°00'35"N, 139°14'41"W

16406 Yukon Inc., 2011, 2013-2014

Water License: PM11-029 (Active 2021)
Active Producer (2011, 2013-2014) **Operation no. 37**

LOCATION Bear Creek and Discovery Pup.

WORK HISTORY AND MINING CUTS In 2010 and 2012, no information is recorded for status of operation is unknown. Mr. Morgan concentrated his activity on the left limit of Bear Creek, upstream from Discovery Pup, in 2011. In 2014, three personnel were employed at the mine, including two miners and a camp cook. Mr. Morgan opened up a left limit cut of side pay on Bear Creek near his camp and upstream of an unnamed left limit tributary. The length of his cut measured 132 m (433 ft) long by 7 m (23 ft) wide and required monitoring of 8 to 12 m (26 to 39 ft) of muck.

EQUIPMENT AND WATER TREATMENT Equipment documented on site in 2014 included a Hitachi EX300LC excavator for mining pay and loading the 25 ton International rock truck A Caterpillar 330C excavator was used for feeding the plant and a Caterpillar D8K bulldozer was used for moving tailings. The wash plant is a 4 by 20 ft trommel that screens to 1.5" and feeds a 4ft wide sluice run.

Surficial Geology and Stratigraphy Considerable loess accumulation on the left limit of Bear Creek has concealed a paleo-Bear Creek placer deposit. The stratigraphy of the 2014 cut consists of 8 to 12 m (26 to 39 ft) of muck overburden overlying 3 m (10 ft) of pay gravel. The muck overburden is thickest near the mouth of the left limit tributary stream and thins upstream away from the tributary. The middle of the muck section contains a 30 cm thick tephra deposit that is likely Dawson tephra (30 433 to 30 032 yr B.P.; Froese *et al.*, 2006). The underlying pay gravel consists of two general units. The upper brown gravel is 1.5 m (5 ft) thick and consists of moderately imbricated pebble-cobble gravel with a sandy matrix. The lower gravel is 1.5 m (5 ft) thick and is a reddish gravel with coarser clasts and a silty sand matrix. Mr. Morgan describes the lower gravel as heavier. This gravel is the main pay unit and is described as a moderately imbricated, clast supported gravel with 90% clasts and only 10% silty sand matrix. The gravel clasts are dominantly subangular cobbles and boulders. Gold concentrations are generally higher where more boulders are present in the pay gravel. This lower gravel and approximately 1 m (3 ft) of bedrock are sluiced. Quartz vein-rich clasts are more common at the upstream end of the cut. Old timer workings are present on the left limit and are more concentrated at the upstream end of the cut where the loess is thinner and more slide rock (coarse weathered bedrock colluvium) is present in the overburden. The slope above this location is concave, which may indicate preferential erosion of the bedrock.

Bedrock Geology Slabby to decayed schist bedrock.

Gold Characteristics The gold size is described as dominantly 20 mesh with some grains around 3/16". Heavy minerals reported in the placer deposit include barite, pyrite, hematite, and goethite.

Lindow, a tributary of Bear

115O/14 2013: 63°57'40"N, 139°11'56"W

Roberts, A. and M., 2003-2009, 2011, 2013

Water License: PM12-001 (Active 2023)

Active Producer (2011, 2013) **Operation no. 38**

Location Lindow Creek, upper, a right limit tributary of Bear Creek.

Work History and Mining Cuts The status of Mr. and Mrs. Roberts's operation on Lindow Creek is unknown for 2010 and 2012. A cut on the right limit of Lindow Creek was mined in 2011 and 2013 where they encountered old-timer shafts almost every 45 m (150 ft), both up and downstream. Status is unknown for 2014.

Equipment and Water Treatment The wash plant consisted of a double screen shaker with 2" openings on the top and 1" openings on the bottom. Effluent was settled out-of-stream in a system of two settling ponds.

A view looking downstream at Mr. Morgan's left limit cut on Bear Creek.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, quartz-muscovite-calcite schist, gneiss, and amphibolite (INAC, Open File 1996-1(G)).

Gold Characteristics Not reported.

Foster Gulch, a tributary of Klondike River

116B/03 2014: 64°02'11"N, 139°12'55"W

Semple, R., 2013-2014

Water License: PM11-025 (Active 2017)
Active Producer (2013-2014) **Operation no. 39**

Location Foster Gulch.

Work History and Mining Cuts A small test pit was excavated near the mouth of Foster Gulch in 2013 and 2014.

Equipment and Water Treatment Only documented equipment in 2014 was a Hitachi excavator.

Surficial Geology and Stratigraphy Test pitting exposed modern Foster Creek gravel on bedrock. The thickness of the fluvial deposit is approximately 2 to 3 m (6.5 to 10 ft) and consists of a coarse deposit of angular cobble-boulder gravel.

Bedrock Geology Bedrock is quartzite and quartz-muscovite-calcite schist (Mortensen, 1988).

Gold Characteristics Not reported.

Hunker, a tributary of Klondike

116B/03 2014: 64°02'05"N, 139°14'12"W
116B/03 2013: 64°01'44"N, 139°10'13"W

Tatra Ventures Ltd., 2010-2014

Water License: PM04-433 (Active 2015)
Water License: PM10-027 (Active 2015)
Active Producer (2010-2014) **Operation no. 40**

Location Hunker Creek, lower, and Klondike River.

Work History and Mining Cuts Tatra Ventures Ltd. was active on Hunker Creek at its confluence with Klondike River from 2010 to 2013 and downstream in the Klondike River valley in 2014, with four miners operating a daily 11 hour shift and two shop personnel. A total of four cuts were mined in 2010 amounting to 210,000 yd³ (160 556 m³). A mined cut from the Klondike River valley measured 183 by 55 m (600 by 180 ft) totaling 32,000 yd³ (24 465 m³) where more dredged material was encountered than anticipated. One large cut, 198 by 61 m (650 by 200 ft), was mined in 2011 with a total of 225,000 yd³ (172 024 m³) material mined. A total of 360,000 yd³ (275 240 m³) of material was moved in 2012 and two cuts were mined 2013 and measured 122 by 61 m (400 by 200 ft) and 37 by 18 m (120 by 60 ft). In 2014, mining continued near the mouth of Hunker Creek until moving downstream on Klondike River to mine an area untouched by dredging. The initial cut on Klondike River was through virgin gravel and measured 66 m (216 ft) by 70 m (230 ft) to be expanded later in the season.

Equipment and Water Treatment Equipment in 2010 included a John Deere 450DLC excavator, Caterpillar 235C excavator, Caterpillar D9H and D7E bulldozers for stripping and moving pay, three 35-ton DJB and one 25 ton DJB articulating rock trucks for stripping and hauling pay, and a John Deere 230CLC excavator to feed the plant. Added in 2011 were two Caterpillar D400D articulating dump trucks and a Caterpillar D9G bulldozer and John Deere 270CLC excavator were added in 2012. Equipment acquired in 2013 included another Caterpillar D400D articulating dump truck and Volvo L220E loader. The wash plant consisted of a 5 by 12 ft hall screen deck with 1/2" punch plate. Sluice runs were 12 ft wide with expanded metal, boil boxes, hydraulic riffles, and a 40 ft conveyor stacker used to distribute tailings. Water was supplied at 1500 igpm by a 6 by 5" Caprari pump powered by a Deutz engine, allowing the plant to process 100 loose cubic yards (76 m³) of gravel per hour. Groundwater was re-circulated using two 6" Flygt pumps. Due to the nature of the Klondike gravel, sluicing back into mined out cuts allowed for complete recycling of effluent with no surface discharge. In 2014, on Klondike River, two 10" Flygt pumps were used for dewatering into a dredge pond. A two cell jig with a long box was initially used during clean-ups, and completed on a gold wheel.

Surficial Geology and Stratigraphy In 2010, the section averaged a depth of 11.6 to 12.2 m (38 to 40 ft) which consisted of 3.6 to 4.9 m (12 to 16 ft) of thawed, interbedded mud and sand overlying 7.6 m (25 ft) of Klondike River gravel. On average, 2.4 to 3.0 m (8 to 10 ft) of gravel and up to 0.6 m (2 ft) of bedrock was sluiced. In 2011, the stratigraphic section near the mouth of Hunker Creek consisted of 1 m (3 ft) of silt and 3 m (10 ft) of cross-bedded pebble gravel overlying 6 m (20 ft) of planar stratified, imbricated, coarse, cobble gravel. The upper pebble gravel is likely modern Hunker Creek gravel whereas the lower gravel is derived from the Klondike River valley. The bottom 2 m (6 ft) of gravel and 0.5 m (1.5 ft) of graphitic schist bedrock were sluiced. The stratigraphic section exposed by the 2014 Klondike River cut consists of 7 m (23.5 ft) of coarse Klondike River gravel over a

graphitic schist bedrock. The gravel has a fining upward structure with a boulder-dominated gravel at the base and pebble-cobble gravel near the floodplain surface. Most of the clasts throughout the section are subrounded to rounded and are smooth with the exception of some ripped up angular bedrock pieces near the bedrock interface. The percentage of silty sand (matrix) in the deposit generally decreases with depth and in the coarser gravel near the base of the section accounts for <20% of the deposit. The gravel in the lower part of the section contains imbricated boulders suggesting a general down-valley flow direction. The majority of the gold rests on the bedrock surface or within bedrock fractures. The bottom 0.5 to 1 m (1.5 to 3 ft) of gravel and 2 m (6 ft) of bedrock was sluiced.

Additionally, striations were noted on a large boulder near the base of the cut. Striations are scratches that develop through glacial transport, but quickly erode off the clast surface when transported in a stream. The presence of a striated boulder at this location suggests a glacial outwash origin for the lower gravel, rather than a gravel deposited during an interglacial period. The early Pleistocene ice front must have been relatively close to this location in order for the striations to be preserved on the boulder surface. The closest evidence of pre-Reid glacial deposits in the vicinity is near Rock Creek in the Tintina Trench.

Bedrock Geology Bedrock is decomposed graphitic schist with vuggy quartz veins.

Gold Characteristics Gold from Klondike River deposits near the mouth of Hunker Creek is fine grained with very few nuggets and has an average fineness of 775. Gold from the 2014 Klondike River cut is coarse, has few fines and many grains have an angular character. Gold grains from 2 to 4 mm in size are common.

A complete section of Klondike River gravel exposed at Tatra Ventures operation in 2014. The gravel and exposed bedrock section is about 8.5 m (28.5 ft) thick.

Tatra Ventures Ltd.'s operation at the mouth of Hunker Creek in 2013.

Hunker, a tributary of Klondike

116B/3 2013: 64°01'37"N, 139°10'06"W

T.D. Oilfields Services Ltd. 1996-2013

Water License: PM04-382 (Active 2015)

Active Producer (2010-2013) **Operation no. 41**

Location Hunker Creek, approximately 1.5 km upstream from its confluence with Klondike River

Work History and Mining Cuts Throughout 2010 to 2013, a large crew mined at the Hunker Creek operation. Mining focused on the left limit and progressed downstream. In late 2013, after reclamation was completed on Hunker, the crew moved over to their Sulphur Creek operation.

Equipment and Water Treatment Equipment on site included a Caterpillar D10W bulldozer, two Caterpillar D9H bulldozers, two Caterpillar 980C loaders, a Caterpillar 980B loader, three Caterpillar 769C rock trucks, a Hitachi 450 excavator, and a Caterpillar 330 excavator. The wash plant consisted of a 25 cubic yard hopper feeding a 5 by 10 ft Clemro screen, leading to eight sluice runs, each 2 ft wide by 20 ft long with tailings removed by a 36" by 80 ft conveyor. Effluent was treated in out-of-stream settling ponds and 100% recycled.

Surficial Geology and Stratigraphy The stratigraphic section of Hunker Creek consists of 1.8 m (6 ft) of cobble gravel overlain by 7.6 m (25 ft) of interbedded mud and sand and 9.1 m (30 ft) of black muck.

Bedrock Geology Bedrock is dunite and peridotite (Mortensen, 1988).

Gold Characteristics Not reported.

T.D. Oilfields Services Ltd.'s wash plant on Hunker Creek in 2012 (Photo credit: Jim Leary).

Hunker, a tributary of Klondike

116B/03 2014: 64°01'13"N, 139°09'32"W

Henry Gulch Explorations Ltd., 1997-2000, 2005-2014

Water License: PM04-416 (Active 2015)

Active Producer (2010-2014) **Operation no. 42**

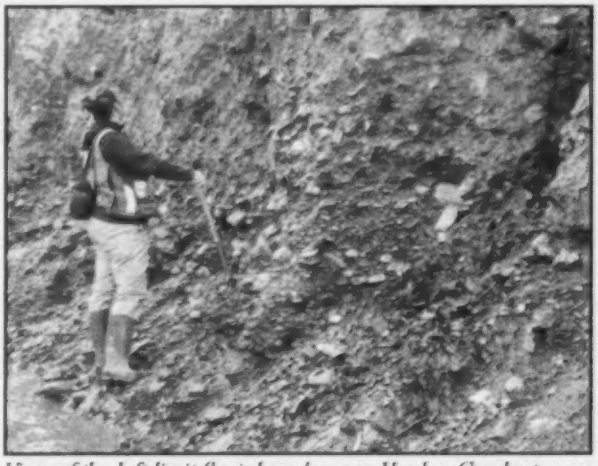
Location Hunker Creek, near confluence, and Hattie Gulch.

Work History and Mining Cuts Three different locations were mined in 2010: right limit bench of Hunker Creek; left limit of Hunker Creek near its confluence with Klondike River; and Hattie Gulch, a right limit tributary of Hunker Creek. Four to five miners and one camp personnel operated a daily 11 hour shift under PM04-416 in 2010. Two cuts were mined on the right limit bench, claim 24, the first measured 23 by 46 by 15 m (75 by 150 by 50 ft) and the second 30 by 76 by 15 m (100 by 250 by 50 ft). On the left limit of Hunker Creek, a 46 by 61 by 15 m (150 by 200 by 50 ft) cut and a 23 by 152 by 15 m (75 by 500 by 50 ft) cut on Hattie Gulch were mined. In 2011, a crew of five miners and one camp personnel continued mining on the left limit of Hunker Creek, 1.5 km upstream from its confluence with Klondike River, and 3 km upstream Hattie Gulch. A 30 by 61 by 9.1 m (100 by 200 by 30 ft) cut at the mouth of Hunker Creek and a 61 by 46 by 21 m (200 by 150 by 70 ft) cut on Hattie Gulch were mined. In 2012, the only location mined consisted of a 76 by 61 by 4.6 m (250 by 200 by 15 ft) cut in the middle of the Hunker Creek valley, approximately 1.5 km upstream from its confluence with Klondike River. In 2013, they mined the left limit of Hunker Creek near the previous years work. This consisted of two cuts measuring 34 by 67 by 30 m (110 by 220 by 100 ft) and 18 by 37 by 24 m (60 by 120 by 80 ft). In 2014, operations continued on the left limit of Hunker Creek.

Equipment and Water Treatment Between the three locations, equipment in 2010 included a monitor, Hitachi EX400 excavator, Hitachi EX200 excavator, Caterpillar 235 excavator, Caterpillar D9H bulldozer, two Caterpillar D400E articulating trucks, and two Caterpillar D350 articulating trucks. The monitor was used at the left limit of Hunker in 2011, as well as a Caterpillar D9H bulldozer, Hitachi EX450excavator, and two Caterpillar D400E articulating trucks. Equipment present at Hattie Gulch included a Hitachi EX450excavator, Caterpillar D9H bulldozer, Volvo L220E loader, and two Caterpillar D400E articulating trucks. In 2012 and 2013, a Hitachi EX450excavator, Caterpillar D9H bulldozer, Volvo L220E loader, and two Caterpillar D400E articulating trucks were present at Hunker Creek. The wash plant consisted of a single deck, oscillating screener with a 3/4" punch plate leading to two sluice runs with expanded metal over mats, four boil boxes, and hydraulic riffles. The

plant processed 80 to 100 loose cubic yards (61 to 76 m^3) of gravel per hour and water was supplied at 1500 igpm by a 6 by 6" Indeng pump, powered by a Isuzu engine. In 2012 and 2013, an 8 by 10" Paco pump powered by a Caterpillar engine supplied water at 1500 igpm. On the right limit bench claim in 2010, water was pumped from an old mined out area on the right limit of Hunker Creek valley and 100% recycled out-of-steam in a 30 by 152 by 4.6 m (110 by 500 by 15 ft) pond. Later becoming a settling pond, the cut on the left limit of Hunker Creek, near the mouth, acquired water from an in-stream rock weir that directed water to two large pump ponds on demand, in 2010 and 2011. Out-of-stream settling occurred through a 46 by 91 by 3.6 m (150 by 300 by 12 ft) pond in 2010 and a 76 by 61 by 4.6 m (250 by 200 by 15 ft) pond in 2011. On Hattie Gulch, in 2011 and 2012, make-up water was acquired from Hunker Creek into two recycling ponds and settled in a series of three out-of-stream settling ponds each 24 by 46 by 3.6 m (80 by 150 by 12 ft). An in-stream rock weir directing water into two large pump ponds was used from 2012 to 2014 with effluent settled out-of-stream. A long tom over a two-cell jig and 3 ft gold wheel was used for clean-ups.

Surficial Geology and Stratigraphy In 2010, on the right limit of Hunker Creek, an intermediate level bench was mined 7.6 m (25 ft) above the valley floor. The stratigraphy consists of thawed layered silt mixed with slide rock overlying paleo-Hunker Creek gravel. Approximately 1.2 to 1.5 m (4 to 5 ft) of gravel and 0.6 to 1.2 m (2 to 4 ft) of bedrock was sluiced. The 2010 left limit cut, near the mouth of Hunker Creek, consists of 15 m (50 ft) of frozen black muck with interbedded ice and slide rock. The overburden was monitored off which exposed a 12 m (40 ft) standing shaft. Underlying the muck sequence is Hunker Creek gravel of which 1.2 to 1.8 m (4 to 6 ft) and 0.6 to 1.2 m (2 to 4 ft) of bedrock were sluiced. In 2010, work was also initiated on Hattie Gulch where more than 30 m (100 ft) of White Channel gravel was exposed. The basal White Channel gravel unit was targeted and 1.8 to 2.4 m (6 to 8 ft) of gravel and 0.3 to 0.9 m (1 to 3 ft) of bedrock sluiced exposing wavy and decomposed bedrock. In 2011, at the mouth of Hunker Creek, 18 to 24 m (60 to 80 ft) of frozen black muck with ice lenses and slide rock was exposed, overlying 3 m (10ft) of frozen Hunker Creek gravel. The bottom 0.9 to 1.5 m (3 to 5 ft) of gravel and 1.2 to 1.8 m (4 to 6 ft) bedrock were sluiced. In 2011, work also continued on the White Channel deposit at Hattie Gulch. The stratigraphic section was similar to 2010 for this location with the exception of the gravel being mostly frozen. The bottom 1.8 to 3.0 m (6 to 10 ft) of gravel and 0.3 to 0.9 m (1 to 3 ft) of bedrock were sluiced. In 2012, mining occurred in the middle of the Hunker Creek valley where tailings overlie small patches of virgin ground. All the tailings and 0.6 to 0.9 m (2 to 3 ft) of bedrock were



View of the left limit fluvial geology on Hunker Creek at Henry Gulch Explorations Ltd.'s cut in 2014. The pay gravel is overlain by 5 m (16.4 ft) of diamicton, gravel, and tailings overburden. The rusty brown bedrock exposed at the base of the cut is schist.

Active mining by Henry Gulch Explorations Ltd. in 2013 (Photo credit: Jim Leary).

sluiced. In 2013 and 2014, mining continued on the left limit of Hunker Creek under an apron of thick muck. At the downstream end of the claim block, a section of Hunker Creek gravel was exposed under a veneer of tailings. The bedrock is a brown to grey, blocky schist and is overlain by 6 m (20 ft) of coarse gravel units, grey diamictons, and tailings. Unit 1, directly above bedrock, consists of 0.5 m (1.6 ft) of imbricated cobble gravel with minor boulders and about 24% vein quartz clasts. This unit is the main pay gravel. Unit 2, from 0.5 to 1.6 m (1.6 to 5.2 ft), is a grey diamicton (silt-rich deposit) with some quartz clasts and washed gravelly lenses. Unit 3, from 1.6 to 3.1 m (5.2 to 10.2 ft), is an oxidized, poorly sorted, pebble-cobble gravel. Some open work lenses are present and are heavily stained from groundwater depositing iron. Unit 4 is another diamict deposit similar to unit 2 and extends from 3.1 to 3.6 m (10.2 to 12.1 ft). The final unit consists of YCGC dredge tailings from 3.6 to 4.8 m (12.1 to 17.7 ft).

Bedrock Geology Bedrock in the valley on the left limit is yellow layered to dark blocky schist. On the right limit, bedrock is fractured, blocky schist. Hattie Gulch is underlain by decomposed schist.

Gold Characteristics Gold from the right limit bench is rough, angular, some is crystalline and has a fineness ranging from 730 to 750. Of this gold, 3.5% is 10 mesh, 9% is -10 mesh to +16 mesh, and 87.5% is -16 mesh. On the left limit of Hunker gold is dark, angular with some crystalline, and ranges from 730 to 750 fine. The gold is 2-5% 10 mesh, 6-10% -10 mesh to +16 mesh, and 88-89% -16 mesh. Hattie Gulch gold is bright, angular, and crystalline, with 5% 10 mesh, 10% -10 mesh to +16 mesh, and 85% -16 mesh. Fineness varies from 730 to 740. Gold removed from Hattie Gulch in 2011 has a fineness of 800. Gold recovered in 2012 from mid-valley Hunker Creek is angular and rough with 3% +10 mesh, 12% -10 mesh to +16 mesh, and 85% -16 mesh and has a fineness of 730 to 750. On the left limit of Hunker Creek, gold is fine, angular and smooth with 2% +10 mesh, 11% -10 mesh, and 87% -18 mesh.

The sluice plant of Mr. Gillespie's mining operation on Henry Gulch in 2013 (Photo credit: Jim Leary).

Henry Gulch, a tributary of Hunker

116B/03 2014: 64°00'44"N, 139°08'29"W

Gillespie, R., 1995-2002, 2005, 2008-2014

Water License: PM09-649 (Active 2020)

Active Producer (2010-2014) **Operation no. 43**

Location Henry Gulch, left-limit tributary of Hunker Creek.

Work History and Mining Cuts Henry Gulch has an abundance of historical workings including shafts and old tailings. Mr. Gillespie mined and stripped progressively upstream from 2010 to 2014. In 2012 and 2013, pay from the left limit was hauled to the sluice plant located on the left limit bench farther downstream. A gravel rim, on the right limit, was mined throughout 2014.

Equipment and Water Treatment Equipment included a Caterpillar 320 excavator, Caterpillar 212 excavator, Caterpillar 966C loader, and Volvo rock truck. The wash plant consisted of a 5 by 10 ft oscillating screen deck with a stacker leading to a 3 ft wide and 10 ft long sluice run. Water for sluicing was 100% recycled and acquired from a reservoir pond on Henry Gulch.

Surficial Geology and Stratigraphy The 2014 mine cut on the right limit contains an old shaft that had been filled with tailings. The 1.8 m (6 ft) exposure is composed of a mixture of old tailings, pockets of virgin, pebble-cobble gravel, and decomposed, undulating bedrock. A 3.0 m (10 ft) unit of colluvium and loess overlays the section and thickens towards the hillside.

Bedrock Geology Bedrock varies from highly fractured to blocky quartzite.

Gold Characteristics Gold is fine.

Downstream view of Mr. Gillespie's operation in 2014.

Hunker, a tributary of Klondike

116B/03 2014: 64°01'24"N, 139°07'40"W

Australian Hill Mining, 2012-2014

Water License: PM13-022 (Active 2020)
Active Producer (2012-2014) **Operation no. 44**

Location Right limit bench of Hunker Creek, downstream of Hattie Gulch.

Work History and Mining Cuts Mr. Gould and his family were first active in 2012, where they acquired equipment and stripped a small cut in the fall. Throughout 2013 and 2014, sluicing occurred from May to October on the right limit bench. The property has been previously drilled and contains an abundance of old timer drifts. Bulk sampling occurred as Mr. Gould tested different locations on the claims.

Equipment and Water Treatment Equipment included a John Deere 330 excavator, hydraulic monitor, John Deere 6 by 3" pump for supplying make-up water from Hunker Creek to the ponds on the hill, a 10 by 8" pump used for monitoring, and a 8 by 6" pump for sluicing. The wash plant consisted of a 4 by 20 ft trommel that screened to 3/4" minus over a sluice section of 1" angle iron and two 4 ft wide by 12 ft long sluice runs with expanded metal.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, graphite-quartzite, and quartz-muscovite-calcite-schist (Mortensen, 1988).

Gold Characteristics Not reported.

Mr. Gould sluicing on Hattie Gulch in 2014 (Photo credit: Jim Leary).

Last Chance, a tributary of Klondike

116B/03 2014: 64°00'40"N, 139°05'42"W

Tatra Ventures Ltd., 2014

Water License: PM04-405 (Active 2015)
Active Producer (2014) **Operation no. 45**

Location Mouth of Last Chance Creek.

Work History and Mining Cuts Mr. Knutson initiated work on this property in August of 2014. Work included testing dredge tailings and testing for shallow ground on the left limit of Hunker Creek.

Equipment and Water Treatment Equipment on site included a Caterpillar 235C excavator for digging and loading pay, Caterpillar D400D haul truck, Caterpillar D9H bulldozer, Deere 270LC for feeding the plant, and a loader for moving tailings. The wash plant is a 5 by 20 ft trommel that screens to 3/4" and feeds four sluice runs. A conveyor stacked the oversize fraction off the trommel.

Surficial Geology and Stratigraphy The near surface material in a dredge tailing pile is representative of the deepest unit extracted by the dredge. At this location on Hunker Creek the surface tailing material contained considerable decomposed bedrock fragments mixed together with fluvial clasts. The YCGC dredge trommel did a poor job of completely washing the clay-rich bedrock/gravel interface material, which presents a good technogenic target for modern miners.

Bedrock Geology Bedrock is quartzite, graphite-quartzite, and quartz-muscovite-calcite-schist (Mortensen, 1988).

Gold Characteristics Not reported.

Tatra Ventures Ltd. trommel at the mouth of Last Chance in 2014 (Photo credit: Jim Leary).

Last Chance, a tributary of Hunker

115O/14	2014: 63°59'51"N, 139°06'31"W
116B/03	2012: 64°00'04"N, 139°06'45"W

Favron Enterprises Ltd., 2000-2014

Water License: PM04-369 (Active 2014)
Water License: PM04-403 (Active 2014)
Active Producer (2010-2014) **Operation no. 46**

Location Last Chance and Dago Hill.

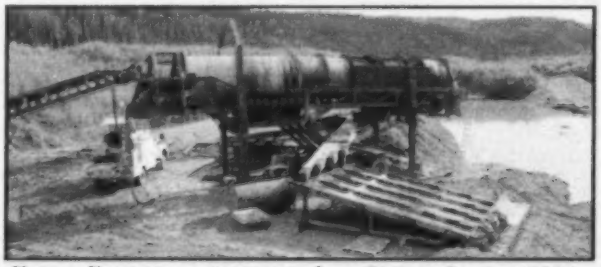
Work History and Mining Cuts From 2010 to 2013, activity occurred on Dago Hill. In 2014, mining occurred on Dago Hill in the spring and relocated to Last Chance Creek in mid-July. Four miners and one camp personnel operated on the left limit, approximately 500 m upstream from the mouth of Eight Pup.

Equipment and Water Treatment Equipment included a Hitachi EX750 excavator, John Deere 800 excavator, Hitachi Zaxis 850 excavator, John Deere 330 excavator, Caterpillar D9N and D10N bulldozers, two Terex 8220 bulldozers, and three Komatsu HM400 rock trucks. The wash plant consisted of a 6 ft diameter by 45 ft long trommel with 25 ft of wash section and 15 ft of 3/4" screen. Eight sluice runs, each 3 ft wide by 20 ft long, were comprised of expanded metal, riffles, and lined with unbacked nomad matting. A small, 3.5 ft diameter test trommel was also used. Water was supplied via a 10" Pioneer pump powered by a Detroit diesel engine. A trommel wash plant was located on site in 2011. Water was fully recycled with no discharge.

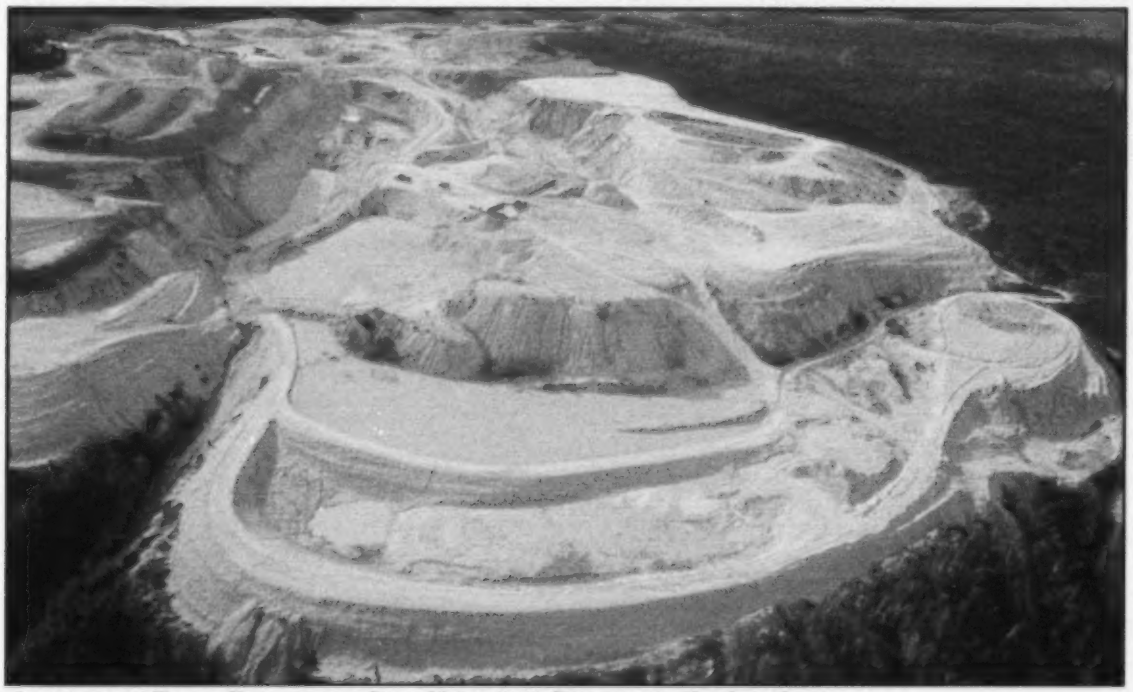
Surficial Geology and Stratigraphy A White Channel tailings fan and Last Chance side pay were mined in 2014. The left limit cut exposed side pay which is composed of a 0.3 m (1 ft) mixed zone of decomposed bedrock and fine sand. From 0.3 to 0.9 m (1 to 3 ft) is a diamicton, with 60% clay and sand matrix, angular pebbles and cobbles, and a maximum clast size of 7 cm. A pebble gravel from 0.9 to 1.1 m (3 to 3.6 ft) is clast supported, with a clay-rich matrix at the bottom of the unit and grades into a sand dominated matrix. A fan of White channel tailings overlays the section. All gravel, up to 0.9 m (3 ft), and 0.3 m (1 ft) of bedrock, depending on composition, was sluiced.

Bedrock Geology Bedrock is altered black and orange schist.

Gold Characteristics Gold from Dago Hill is nuggety, up to 3/4 oz with 80% fines. Last Chance gold is moderately coarse.



Favron Enterprises sluicing on Last Chance Creek in 2014.



Aerial view of Favron Enterprises at Dago Hill in 2011 (Photo credit: Jim Leary).

Last Chance, a tributary of Hunker

115O/14 2014: 63°58'26"N, 139°08'04"W
115O/14 2014: 63°59'39"N, 139°06'58"W

Last Chance Placers Ltd., 1991-2014

Water License: PM04-424 (Active 2015)
Active Producer (2010-2014) **Operation no. 47**

Location Last Chance Creek, from mouth of Discovery Pup upstream to 15 Above Pup.

Work History and Mining Cuts Last Chance Placers Ltd. operated a daily 10.5 hour shift with four to five miners from 2010 to 2013. The main valley between Discovery Pup and 8 Above Discovery Pup was mined from 2010 to mid-2013 when the operation relocated 16 claims upstream in late 2013. Two to three cuts averaging 91 by 61 m (300 by 200 ft) were mined throughout 2010 to 2013. In late 2013, a 146 by 30 m (480 by 100 ft) cut was mined having stripped 9.1 m (30 ft) of muck in prior seasons. Pay was hauled out of Last Chance Creek valley to a constructed landing 12 m (40 ft) above the modern stream valley at the mouth of 15 Pup. Mining occurred approximately 600 m downstream from the mouth of Henrietta Pup in 2014.

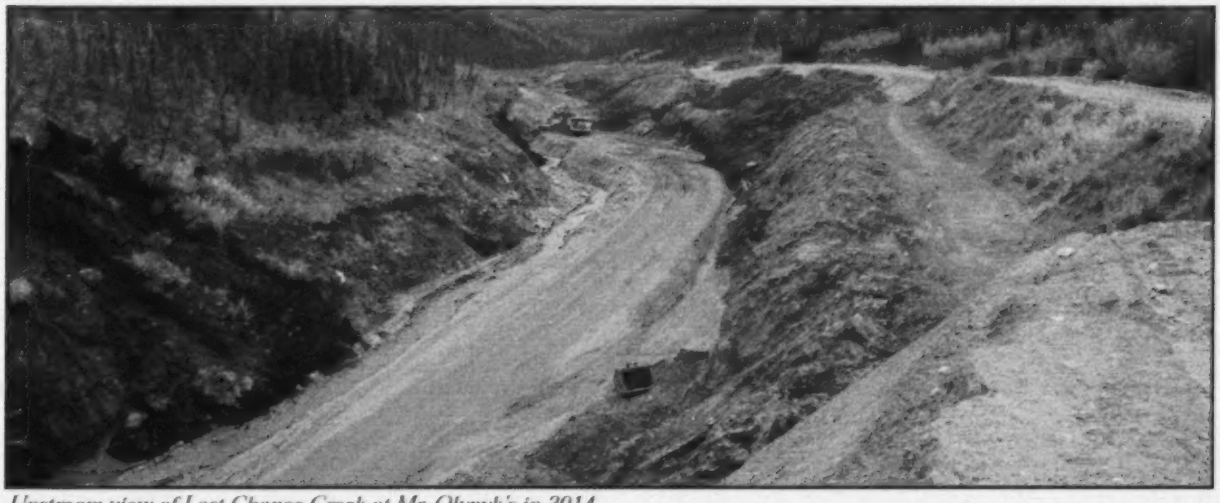
Also mining under Mr. Olynyk's license, were Mr. and Mrs. Glenn on Discovery Pup who have been active since 2012.

Equipment and Water Treatment Equipment from 2010 to 2013 included two Caterpillar D9H bulldozers, a Caterpillar D8K bulldozer, Hitachi EX450 LC excavator, Hitachi EX270 LC excavator, and 50 ton International Harvester 350 Payhauler dump truck. The wash plant consisted of a 5 by 11 ft single deck oscillating screen with 3/4" punch plate, feeding a 4 by 6 ft tray lined with Nomad matting and 1" angle iron riffles, which fed into two 4 by 8" oscillating trays with Nomad matting under large expanded metal. Supplied at 1800 igpm by an 8 by 6" Cornell pump, powered by a John Deere diesel engine, the re-circulated water allowed the plant to process 90 loose cubic yards (69 m³) per hour. Water was acquired from a 24 by 15 by 1.8 m deep (80 by 50 by 6 ft) recirculating pond and discharged to a settling pond and eventually into Last Chance Creek and the recirculation pond. Approximately 50% of water was re-circulated. In 2013, when the operation moved upstream, an out-of-stream settling pond 61 by 24 m (200 by 80 ft) was used as a re-circulation pond after effluent was discharged from the sluice into 15 Pup and directly back into the recirculation pond. Concentrate was run on the long tom and finished on a wheel during clean-ups.

The Glenn's operated with a Caterpillar 313 excavator and a custom 3.5 ft diameter trommel with a 1" screen and a hydraulic grizzly on a 4 by 6 ft hopper built by Mr. Glenn. This plant was able to process 30 cubic yards (23 m³) per hour unlike the smaller custom built trommel initially used.

Surficial Geology and Stratigraphy Prior to mining a cut on Last Chance Creek, up to 9.1 m (30 ft) of black muck was stripped which, after two years, would thaw and dry enough to be workable. At the base of the section is 0.8 m

Mr. and Mrs. Glenn's custom trommel on Discovery Pup.



Upstream view of Last Chance Creek at Mr. Olynyk's in 2014.

Mr. Olynyk at his cut in 2011 (Photo credit: Lee Olynyk).

(2.6 ft) of highly fractured bedrock of varying lithologies and degree of decomposition. From 0.8 to 1.0 m (2.6 to 3.3 ft) is pebble-cobble gravel with angular clasts and bedrock fragments in a silty matrix. Overlying the gravel, from 1.0 to 1.2 m (3.3 to 3.9 ft) is undulating sandy pebble gravel that is moderately oxidized. This finer gravel is overlain by the main gravel unit from 1.2 to 1.8 m (3.9 to 5.9 ft). This unit is a brown pebble cobble gravel with a silty sand matrix and contains 60% subrounded pebbles and less than 1% boulders. Overburden was composed of fine silt and organics. Up to 3.0 m (10 ft) of gravel and 1.4 m (4.5 ft) of bedrock was sluiced.

Bedrock Geology Bedrock varied from graphitic schist, decomposed schist, and blocky quartzite.

Gold Characteristics Gold on Last Chance Creek is very bright and 80% smaller than 12 mesh, with some dendritic and crystalline specimens. Silver on the rim has been leached out by strong acidic groundwater causing the brightness and an approximate fineness of 900 along the rim of the grains. An average fineness varies from 680 to 700. Gold from Discovery Pup is primarily smooth with some coarse pieces and nuggets are up to 1/4 oz. Fineness ranged from 690 to 695.

Wash plant and 2013 cut at WAM Exploration on Last Chance Creek (Photo credit: Jim Leary).

Last Chance, a tributary of Hunker

115O/14 2013: 63°57'24"N, 139°09'14"W

WAM Exploration, 2007-2009, 2011, 2013-2014

Water License: PM06-541 (Active 2016)

Active Producer (2011, 2013-2014) **Operation no. 48**

Location Right fork of Last Chance Creek.

Work History and Mining Cuts Minimal work history is recorder pertaining to WAM Exploration's operation on upper Last Chance Creek, with status in 2010 and 2012 unknown. In 2011, Mr. McIntyre moved upstream on the right fork of Last Chance Creek and continued mining upstream on the right fork throughout 2013 and 2014.

Equipment and Water Treatment A system of three in-stream reservoirs and settling ponds were used to recycle 100% of the sluice water.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, quartz-muscovite-calcite schist, gneiss, and amphibolite (Mortensen, 1996).

Gold Characteristics Not reported.

Eighty Pup, a tributary of Hunker

116B/03 2013: 64°00'05"N, 139°05'47"W

Moonlight Mining Ltd., 2013-2014

Water License: PM07-561-2 (Active 2017)
Active Producer (2013-2014) **Operation no. 49**

Location Eighty Pup and Last Chance Creek

Work History and Mining Cuts Moonlight Mining Ltd. was reassigned the water license from Northway Mining & Exploration Inc. in 2012. No specific work history is known aside from sluicing reported in 2013 and 2014.

Equipment and Water Treatment Equipment onsite includes a Hitachi 200 excavator and a trommel. Water was initially acquired from Last Chance Creek and became a complete recirculation system with zero discharge.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, quartz muscovite calcite schist, gneiss, and amphibolite (Mortensen, 1988).

Gold Characteristics Not reported.

Sluicing at Moonlight Mining Ltd.'s operation in 2014 (Photo credit: Jim Leary).

Active wash plant at Tamarack Inc.'s operation on Hunker Creek in 2011 (Photo credit: Jim Leary).

Paradise Hill, a tributary of Hunker

115O/14 2012: 63°59'41"N, 139°04'02"W

Tamarack Inc., 1983-1986, 1989-1999, 2005-2012

Water License: PM02-296 (Active 2013)
Water License: PM07-571 (Active 2018)
Active Producer (2010-2012) **Operation no. 50**

Location Paradise Hill and Hunker Creek, between Last Chance Creek and Hester Creek

Work History and Mining Cuts Several cuts were stripped and mined on Paradise Hill from 2010 to 2012. Mining in 2010 continued upstream from 80 Pup on Paradise Hill. Activity in 2011 and 2012 included stripping and monitoring, but specific work history is unknown. Activity is unknown in 2013 and 2014.

Equipment and Water Treatment The wash plant consisted of an 8 ft diameter land trommel, with six 2 by 15 ft oscillating sluice runs, able to process 200 loose cubic yards (150 m^3) of gravel per hour. The water was collected from an in-stream reservoir on Hunker Creek and effluent was released into a series of settling ponds in the Hunker Creek valley.

Surficial Geology and Stratigraphy Paradise Hill's stratigraphic section varied from 25 to 35 m (82 to 115 ft) of White Channel gravel on bedrock.

Bedrock Geology Bedrock varies from graphitic to chloritic schist.

Gold Characteristics Not reported.

Hester, a tributary of Hunker

115O/14 2010: 63°59'23"N, 139°02'06"W

Olson, D., 2010

Water License: PM07-552 (Active 2017)
Active Producer (2010) **Operation no. 51**

Location Hester Creek, between Last Chance Creek and Independence Creek.

Work History and Mining Cuts Mr. Olson mined Hester Creek and the left limit of Hunker Creek in 2010. In 2011, a settling pond complex was constructed at the mouth of Hester Creek. Work history is unknown in 2012 and minimal activity occurred in 2013. No activity occurred in 2014.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is porphyry and rhyolite (Mortensen, 1996).

Gold Characteristics Not reported.

Independence, a tributary of Hunker

115O/14 2014: 63°58'45"N, 139°01'27"W

Phillips, P. and D. 2011-2014

Water License: PM08-622 (Active 2021)
Active Producer (2011-2014) **Operation no. 52**

Location Mouth of Independence Creek.

Work History and Mining Cuts The Phillips acquired Independence Creek from Mr. Kosuta and first mined in 2011and conducted a drill program. Extensive monitoring and mechanical muck removal on both limits was the focus of operations in 2014. Two to three miners operated a daily 10 hour shift, mining progressively upstream and stripping the upper claims throughout the season.

Equipment and Water Treatment Equipment in 2014 included Komatsu PC200 and PC400 excavators, a Hitachi EX300 excavator, two Caterpillar 8L bulldozers, Caterpillar 980 wheel loader, and two Caterpillar 300B haul trucks. Two trommels were present. The first was a 4 ft trommel with a 5/8" screen, able to process 50 loose cubic yards (38 m^3) per hour, and the other a 4 ft New Zealand style trommel, able to sluice 40 loose cubic yards (30 m^3) per hour. A series of four ponds enabled the water to be 100% recycled. Top mats were cleaned daily and a sluice box was used for clean ups.

Surficial Geology and Stratigraphy A thick muck deposit overlying Independence Creek gravel comprises the 12 m (40 ft) left limit cut. Pay gravel, at the bedrock contact, is 1.2 m (3.9 ft) thick and is composed of pebble gravel (5% cobbles, 45% pebbles, and 50% granules) and a sand matrix. The gravel is weakly imbricated in a downstream direction and clasts are subangular to subrounded, with a maximum clast size of 15 cm (0.5 ft). From 1.2 to 4.3 m (3.9 to 14.1 ft) there is black muck with an abundance of woody debris. Interbedded pebble gravel, granules, medium to coarse sand, and silty organics are present from 4.3 to 6.1 m (14.1 to 20.0 ft). A continuous silty organic lens undulates throughout the unit and varies in thickness from 0.6 to 1.2 m (2 to 4 ft). The last unit from 6.1 to 12 m (20 to 40 ft) is black muck with an abundance of organic material and trees. Pay gravel on bedrock thickens upstream and on the left limit, up to 1.8 m (6 ft) was sluiced.

Bedrock Geology Bedrock greatly varies from weathered muscovite-calcite schist to blocky quartzite.

Gold Characteristics Gold at the mouth is typical 'Hunker Gold', with a fineness of 788. As you move farther upstream, gold becomes coarser and rougher, and has a fineness of 740.

A view of the left limit bank of Independence Creek. The thick muck section was removed using irrigation sprinklers and mechanical excavation.

HUNKER, A TRIBUTARY OF KLONDIKE

115O/15 2014: 63°58'29"N, 138°59'52"W

Daval Mining, 1982-2014

Water License: PM09-654 (Active 2020)

Active Producer (2010-2014) **Operation no. 53**

LOCATION Hunker Creek, near the mouth of Colorado Creek.

WORK HISTORY AND MINING CUTS Mining occurred along the right limit of Hunker Creek, upstream from the mouth of Colorado Creek from 2010 to 2013. In 2014, 3 to 4 miners operated a daily 9 to 10 hour shift on the right limit of Hunker Creek. A total of 11 468 m^3 (15,000 yd^3) gravel was mined throughout the season.

EQUIPMENT AND WATER TREATMENT Equipment included a Komatsu PC220 excavator, Caterpillar 245, Hitatchi Zaxis 450 excavator, Caterpillar D10 bulldozer, and two Caterpillar 769B haul trucks. The wash plant consisted of a 5 by 20 ft trommel with a 1/2" screen over a 10 ft wide by 8 ft long sluice run of hydraulic riffles and expanded metal. The trommel was able to process 60 loose cubic yards (46 m^3) of gravel per hour. A cell mining system has been successfully used on the property for many years. This is where pay is sluiced back into mine cuts with a full recycle system that generates no direct effluent discharge to Hunker Creek.

SURFICIAL GEOLOGY AND STRATIGRAPHY Virgin ground is composed of 2.4 m (8 ft) of Hunker gravel and 15.2 m (50 ft) of overburden. All gravel and 0.3 to 1.8 m (1 to 6 ft) of bedrock was sluiced.

BEDROCK GEOLOGY Bedrock is quartzite, quartz-muscovite-calcite schist, gneiss, and amphibolite (Mortensen, 1996).

GOLD CHARACTERISTICS Gold is very fine, minus 12 mesh, and has a fineness of 815.

Daval Mining's trommel on Hunker Creek in 2013 (Photo credit: Jim Leary).

Looking northwest at Daval Mining operation in late 2014.

Hunker, a tributary of Klondike

115O/15 2014: 63°58'03"N, 138°58'13"W

Fraser, I., 2013-2014

Water License: PM13-023 (Active 2023)
Active Producer (2013-2014) **Operation no. 54**

Location Hunker Creek, approximately 250 m downstream from mouth of Gold Bottom Creek.

Work History and Mining Cuts Mr. Fraser began operating in 2013, after several years of inactivity. Minimal work history is known aside from test pitting on the left limit, in 2014.

Equipment and Water Treatment Equipment present at his sluicing location in 2014 included a Caterpillar 225 excavator, Caterpillar 950 wheel loaders, and a screen deck.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, quartz-muscovite-calcite schist, gneiss, and amphibolite (Mortensen, 1996).

Gold Characteristics Not reported.

Mr. Fraser's wash plant in 2014 on left limit of Hunker Creek, downstream from the mouth of Gold Bottom Creek.

Hunker, a tributary of Klondike

115O/15 2013: 63°57'48"N, 138°58'00"W

Millar, D., 2005-2014

Water License: PM07-588 (Active 2018)
Active Producer (2010-2014) **Operation no. 55**

Location Hunker Creek and lower Gold Bottom Creek.

Work History and Mining Cuts Minimal information pertaining to Mr. Millar's operation is known.

Equipment and Water Treatment Equipment present on site included a Hitachi EX200 excavator, Caterpillar 966C loader, and Caterpillar D8H bulldozer. The wash plant consisted of a 5 ft diameter trommel with a hopper over a 10 ft wide oscillating sluice run with 4 ft of hydraulic riffles and 4 ft of expanded metal. Tailings were stacked with a 30 ft conveyor.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, quartz-muscovite-calcite schist, gneiss, and amphibolite (Mortensen, 1996).

Gold Characteristics Not reported.

Gold Bottom, a tributary of Hunker

115O/15 2013: 63°54'38"N, 138°59'27"W

Jackson, K., 2005-2007, 2009, 2011-2013

Water License: PM04-455 (Active 2015)
Active Producer (2011-2013) **Operation no. 56**

Location Gold Bottom Creek and West Gold Bottom Creek.

Work History and Mining Cuts Minimal information is recorded pertaining to Mr. Jackson's activity from 2010 to 2013. Mr. King, under Mr. and Mrs. Jackson's permission, was authorized to conduct exploration and testing under PM04-455 in 2011. In 2013, Mr. Jackson conducted test pits, sluicing, and a drill program. Activity in 2014 is unknown.

Equipment and Water Treatment Equipment included an excavator, backhoe, and small sluice plant.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, quartz-muscovite-calcite schist, gneiss, and amphibolite (Mortensen, 1996).

Gold Characteristics Not reported.

Gold Bottom, a tributary of Klondike

115O/15 2014: 63°53'07"N, 138°58'19"W

Aimola, A., 1998-2008, 2010-2014

Water License: PM03-354 (Active 2014)
Water License: PM12-008 (Active 2022)
Active Producer (2010-2014) **Operation no. 57**

Location Gold Bottom Creek, upper, and Soap Creek.

Work History and Mining Cuts Mr. Aimola was actively mining from 2010 to 2014, sluicing and monitoring from 2010 to 2012. Hydraulic stripping on the right limit bank of Gold Bottom Creek is recorded for 2012. In 2013, stripping and sluicing occurred, with no specific work history known. A right limit cut, upstream from the main camp was mined in 2014.

Mr. Aimola's cut on Gold Bottom Creek in 2014 (Photo credit: Jim Leary).

Equipment and Water Treatment Two settling ponds are located on the left limit of Gold Bottom Creek, which were also used as water reservoirs. Water was 100% recycled.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, quartz muscovite-calcite schist, gneiss and amphibolite (Mortensen, 1996).

Gold Characteristics Not reported.

Little Gem, a tributary of Hunker

115O/15 2013: 63°57'21"N, 138°54'57"W

Bowman, S., 2013

Water License: PM12-023 (Active 2022)
Active Producer (2013) **Operation no. 58**

Location Little Gem Gulch, between Six Below Pup and 23 Gulch.

Work History and Mining Cuts Mr. Bowman was active in 2013 for the first time after many years of inactivity. A left limit out-cropping was sluiced and the main pit from several years ago at the mouth of Little Gem Gulch was used as a reservoir and settling pond. Status in 2014 is unknown.

Equipment and Water Treatment A small sluice box was located on site in 2013.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, quartz muscovite-calcite schist, gneiss, and amphibolite (Mortensen, 1996).

Gold Characteristics Not reported.

Mr. Bowman's operation in 2014 at Little Gem Gulch (Photo credit: Jim Leary).

Hunker, a tributary of Klondike

115O/15 2013: 63°56'20"N, 138°53'34"W

Erickson, J., 2013-2014

Water License: PM13-033 (Active 2023)
Active Producer (2012-2014) **Operation no. 59**

Location Hunker Creek, downstream of Mint Pup.

Work History and Mining Cuts In 2012 and 2013, two miners and two camp personnel operated a daily 10 hour shift. A 9.1 by 91 m (30 by 300 ft) cut was mined in 2012 and another 6.1 by 91 m (20 by 300 ft) cut in 2013. Activity occurred in 2014 but specific work history is unknown.

Equipment and Water Treatment Equipment included a Caterpillar D9 bulldozer, Caterpillar 235 excavator, and a loader. The trommel wash plant processed 60 loose cubic yards (46 m^3) per hour in 2012 and 80 loose cubic yards (61 m^3) per hour in 2013. Water was acquired from Hunker Creek and supplied at 1200 igpm from a 6 by 6" pump powered by a Perkins engine. Effluent was treated out-of-stream in a series of settling ponds downstream along the left limit and not recycled. A long tom was used for final clean-ups.

Surficial Geology and Stratigraphy The section consists of black muck to a maximum depth of 7.6 m (25 ft) overlying up to 1.2 m (4 ft) of gravel. The sluiced section consists of 0.6 m (2 ft) of gravel and 0.6 m (2 ft) of bedrock.

Bedrock Geology Bedrock is highly decomposed schist.

Gold Characteristics Gold recovered from 2012 is fine with small nuggets and a fineness of 820. The gold recovered in 2013 was coarser.

Hunker Creek, a tributary of Klondike

115O/15 2014: 63°54'50"N, 138°53'11"W

Larose, S., 2010-2011

Water License: PM06-531 (Active 2017)
Active Producer (2010-2011) **Operation no. 60**

Location Hunker Creek and its right fork.

Work History and Mining Cuts Minimal information pertaining to PM06-531 is known. Mr. Larose only conducted stripping in 2010. In 2011, sluicing occurred at the forks and mined progressively upstream of the left fork throughout the season.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, quartz-muscovite-calcite schist, gneiss, and amphibolite (Mortensen, 1996).

Gold Characteristics Not reported.

Upstream view of right fork Hunker Creek at Mr. Larose's cut in 2014 (Photo credit: Jim Leary).

Mr. Erickson and his crew at the wash plant on Hunker Creek in 2013 (Photo credit: Jim Leary).

Hunker, a tributary of Klondike

115O/15 2014: 63°54'13"N, 138°55'02"W

Fournier, A., 2010-2014

Water License: PM07-578 (Active 2015)

Active Producer (2010-2014) **Operation no. 61**

Location Hunker Creek, right fork.

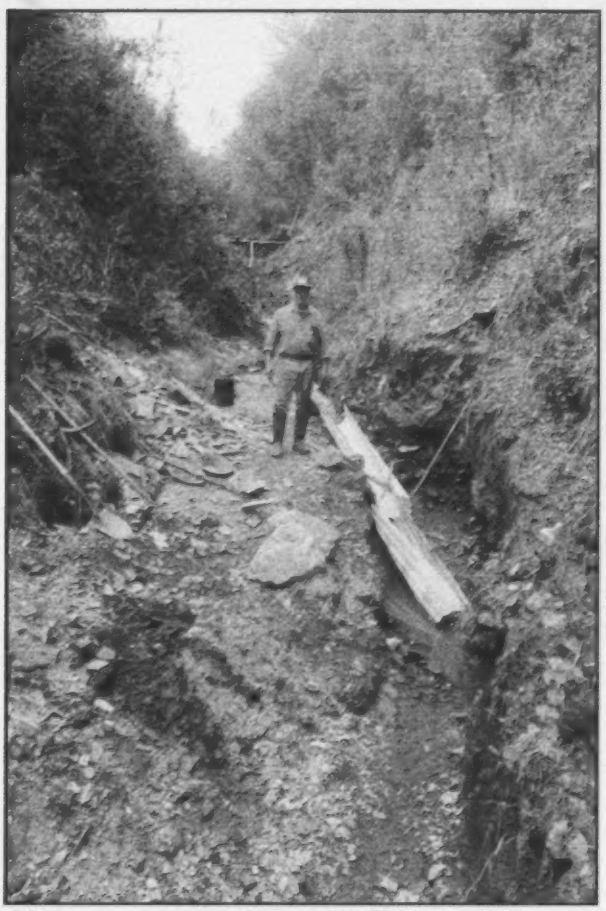
Work History and Mining Cuts Minor testing occurred at Mr. Fournier's operation from 2010 to 2014.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, quartz-muscovite-calcite schist, gneiss, and amphibolite (Mortensen, 1996).

Gold Characteristics Not reported.



Mr. Ahnert on upper 24 Pup in 2014 (Photo credit: Jim Leary).

24 Pup, a tributary of Hunker

115O/15 2014: 63°54'42"N, 138°54'20"W

Ahnert, G. and E., 1978-2014

Water License: PM04-379 (Active 2015)

Active Producer (2010-2014) **Operation no. 62**

Location 24 Pup, locally known as No Bottom Gulch.

Work History and Mining Cuts Exploration activity was the primary work from 2010 to 2014 on 24 Pup. The Ahnert's conducted shafting on previously stripped ground for the past six years, completing 1 or 2 shafts per year, varying in depth from 1.2 to 3.7 m (4 to 12 ft).

Equipment and Water Treatment The Ahnerts mine by hand; therefore no heavy equipment was utilized. The wash plant consisted of a 24 ft long by 1 ft wide long tom. Water is 100% recycled in a series of two ponds.

Surficial Geology and Stratigraphy Stratigraphic sections on 24 Pup range from 0.4 to 0.6 m (1.5 to 2 ft) of well sorted cobble-pebble gravel and up to 3.0 m (10 ft) of loess. All gravel was sluiced.

Bedrock Geology Bedrock varies from weathered quartz-muscovite-calcite schist to blocky quartzite.

Gold Characteristics Three types of gold are recovered from 24 Pup – nuggets, dendritic gold, and very fine gold.

The Ahnert's at their cabin on 24 Pup in 2014 (Photo credit: Jim Leary).

The Palagian's operation in 2013 (Photo credit: Jim Leary).

Hunker, a tributary of Klondike

115O/15 2013: 63°54'20"N, 138°54'46"W

Palagian, N. and L., 2013

Water License: PM10-010 (Active 2020)
Active Producer (2013) **Operation no. 63**

Location Hunker Creek, right fork.

Work History and Mining Cuts The Palagian's purchased the ground from D. Gritzka. Sluicing occurred in 2013, no other work history is recorded from 2010 to 2013. No activity occurred in 2014.

Equipment and Water Treatment Equipment in 2013 included a Bobcat 334 excavator, small bulldozer, and trommel.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, quartz-muscovite-calcite schist, gneiss, and amphibolite (Mortensen, 1996).

Gold Characteristics Not reported.

The George's operation on the right fork of Hunker Creek in 2012 (Photo credit: Jim Leary).

Hunker, a tributary of Klondike

115O/15 2012: 63°54'13"N, 138°55'02"W

George, M. and S., 1997-2012

Water License: PM04-394 (Active 2015)
Active Producer (2010-2012) **Operation no. 64**

Location 36 Pup and Hunker Creek, right fork.

Work History and Mining Cuts From 2010 to 2012, the George's operated a small scale sluicing operation downstream from base camp on the left limit. No sluicing occurred in 2013 or 2014.

Equipment and Water Treatment Material was manually processed using a 1.3 ft diameter trommel. The trommel fed a 2" screen over 14 ft wide by 4 ft long sluice runs that are lined with a boil box and expanded metal. Water was pumped directly from an in-stream depression in Hunker Creek and effluent was settled in a series of out-of-stream ponds with no discharge.

Surficial Geology and Stratigraphy The stratigraphic section consists of 0.9 m (3 ft) of gravel, of which 0.3 m (1 ft) was considered pay, and overlain by 6.1 m (20 ft) of overburden with massive ice lenses.

Bedrock Geology Bedrock is decomposed muscovite-calcite schist.

Gold Characteristics Gold is coarse and has a fineness of 840.

Hunker, a tributary of Klondike

115O/15 2014: 63°53'22"N, 138°55'36"W

Brong, R. and Dotzler, E., 2012-2014

Water License: PM10-069 (Active 2021)
Active Producer (2012-2014) **Operation no. 65**

Location Hunker Creek, right fork.

Work History and Mining Cuts Mr. Brong and Ms. Dotzler mined progressively upstream from 2012 to 2014, processing previously stripped ground.

Equipment and Water Treatment Equipment included a Caterpillar 910 loader and Kubota KX080-3 excavator. The wash plant consisted of a 2 ft reverse trommel with a hopper and grizzly over one sluice run 2 ft wide by 8 ft long with expanded metal. The plant was able to process 10 loose cubic yards (8 m^3) of gravel per hour. Water was 100% recycled in a series of four ponds and no discharge occurred. A pan and wheel were used for clean-ups.

Surficial Geology and Stratigraphy The stratigraphic section on previously stripped ground comprises 1.5 m (5 ft) of gravel and 0.9 m (3 ft) of overburden. A right limit exposure is composed of 1.8 m (6 ft) of colluvium, with angular pebble and cobble sized clasts, silty sand matrix, and layered varying degrees of oxidation. Colluvium is overlain by silty, fine-grained sand with 5-10% clasts. All gravel was sluiced.

Mr. Brong and Ms. Dotzler's operation in 2014 at the upper right fork of Hunker Creek (Photo credit: Jim Leary).

Bedrock Geology Bedrock is decomposed and oxidized muscovite schist.

Gold Characteristics Gold is coarse and has a fineness of 798.

Germaine, a tributary of Klondike

116B/02 2013: 64°02'53"N, 138°55'38"W

Up & Atter Placer, 2012-2013

Water License: PM11-070 (Active 2022)
Active Producer (2012-2013) **Operation no. 66**

Location Germaine Creek, between Goring Creek and Alki Creek.

Work History and Mining Cuts Any work history prior to 2013 was not reported. In 2013, a bench on the left limit of Germaine Creek was mined. This work included stripping at the beginning of the season and testing on the most southeastern extent of the upper bench cut. No activity occurred in 2014.

Equipment and Water Treatment Equipment on site included two Caterpillar scrapers, a John Deere 644E loader, and Caterpillar 225 excavator. Water was 100% recycled in two out-of-stream settling ponds.

Surficial Geology and Stratigraphy At the base of the section, from 0 to 3.0 m (10 ft), is a moderately oxidized cobble-pebble gravel that is clast supported with rounded to sub rounded clasts. The gravel unit is overlain by a lens from 3.0 to 3.4 m (10 to 11 ft) of disorganized pebbly sand and fine to medium grained sand. From 3.4 to 18.4 m (11 – 61 ft) is a silty overburden with an abundance of woody debris.

Bedrock Geology Bedrock exposed on the lower bench is porphyry.

Gold Characteristics Not reported.

Aerial view of Up & Atter Placer on the left limit of Germaine Creek in 2013.

LEOTTA, A TRIBUTARY OF KLONDIKE

115O/15 2014: 63°58'23"N, 138°44'28"W

Duggan, R., 2013-2014

Water License: PM13-017 (Active 2023)

Active Producer (2013-2014) **Operation no. 67**

LOCATION Leotta Creek, between Too Much Gold Creek and Leroy Creek.

WORK HISTORY AND MINING CUTS The Duggan family's first year of activity occurred in fall of 2013, when test trenches were sluiced. Throughout 2014, the majority of activity was focused on the left limit but stripping occurred on a right limit bench in preparation for 2015 mining.

EQUIPMENT AND WATER TREATMENT Equipment included a John Deere 270 excavator and a grizzly feeder wash plant that screened to 1/2". Water was 100% recycled and circulated by a 3 by 5" Cornell pump powered by a Perkins diesel engine. For clean-ups, concentrates were rerun on a slick plate.

SURFICIAL GEOLOGY AND STRATIGRAPHY Klondike gravel was mined at the mouth of Leotta Creek in 2014. The section is composed of 2.9 m (9.5 ft) of weakly stratified cobble-boulder gravel with 60 to 70% clasts, with a medium sand and granule matrix. Clasts are subrounded to rounded, maximum 30 cm, and weakly imbricated. The imbrication shows a change in flow direction in the section. The lower part of the section has a flow direction down the Klondike River valley whereas the upper part of the section is flowing down Leotta Gulch. Overlying the gravel is a variable thickness of loess and old timer workings ranging from 1.8 to 2.4 m (6 to 8 ft) thick. The lower 0.9 m (3 ft) of gravel and a couple feet of bedrock were sluiced.

Wash plant at the Duggan's property.

BEDROCK GEOLOGY Bedrock is decomposed chlorite schist.

GOLD CHARACTERISTICS Gold is mostly fine and has a fineness in the high 800's.

The Duggan's operation at the mouth of Leotta Creek in 2014.

Allgold, a tributary of Flat

115O/15 2013: 63°56'32"N, 138°37'23"W

Henry Gulch Explorations, 2013

Water License: PM04-397 (Active 2015)

Active Producer (2013) **Operation no. 68**

Location Mouth of Allgold Creek and Klondike River, downstream approximately 500 m from Allgold Creek.

Work History and Mining Cuts In 2013, three miners operated a daily 11 hour shift. Two cuts were mined in 2012: the first was a historic cut measuring 18.3 by 91.4 by 1.2 m (60 by 300 by 4 ft) that was re-mined and the second cut was on the lift limit bench of the Klondike River that measured 24.4 by 45.7 by 3.0 m (80 by 150 by 10 ft).

Equipment and Water Treatment Equipment present onsite in 2013 was a Hitachi EX400 excavator, Caterpillar D9G, Volvo 220E loader, and two Caterpillar D400E rock trucks. The wash plant consisted of a two-deck screener to 1/2" minus over expanded metal and mats. Sluice runs included boil boxes and hydraulic riffles. A 6 by 6" Indeng pump powered by an Isuzu engine supplied water to the plant at 1200 igpm, allowing it to process 70 to 80 loose cubic yards (53 to 61 m^3) per hour. Water was acquired from a reservoir pond and treated out-of-stream in a 61 by 76 by 3.6 m (200 by 250 by 12 ft) settling pond. Clean-ups were conducted with a long tom over a two-cell jig and a 3" wheel for fines.

Surficial Geology and Stratigraphy The left limit bench stratigraphy contains 1.5 m (5 ft) of cobbly gravel that is overlain by 1 to 2 m (3 to 6 ft) of black muck near the rim of the bench. The 2013 cut only processed the thawed material on the rim of the bench where the overburden is thinnest. Further into the hill the bench gravel is buried under 7.6 to 9 m (25 to 30 ft) of black muck. All of the gravel and 0.3 to 1.2 m (1 to 4 ft) of bedrock were sluiced. Old hydraulic workings are present at this site from an old timer named D. Strachan. Remains of his sluice are still on the property.

Bedrock Geology Bedrock is quartzite.

Gold Characteristics Gold is flat, smooth, and chunky with minor red staining of which 13% is +10 mesh, 50% is -10 to +18 mesh, and 37% is -18 mesh. Gold has a fineness of 840 to 850.

Henry Gulch Explorations active cut in 2013 on the upper left limit bench of Klondike River.

ALLGOLD, A TRIBUTARY OF FLAT

115O/15 2014: 63°55'16"N, 138°39'34"W

Dulac Mining, 2012-2014

Water License: PM04-401 (Active 2015)
Active Producer (2012-2014) **Operation no. 69**

LOCATION Allgold Creek, downstream from the mouth of 71 Pup.

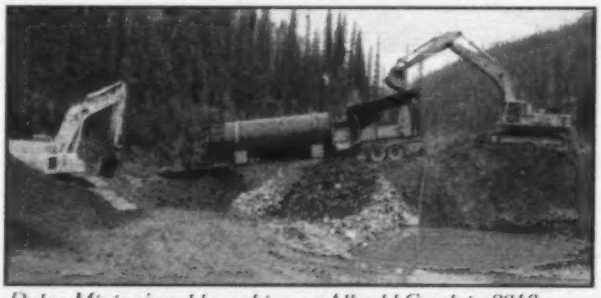
WORK HISTORY AND MINING CUTS Operating under Mr. Alton's water license, Dulac Mining was active on Allgold Creek from 2012 to 2014. With a crew of six miners and a camp cook they operated a daily 10 hour shift, sluicing 38 228 m³ (50,000 yd³) in 2012 and 61 164 m³ (80,000 yd³) in 2013. A total of three cuts were mined in 2012 each 30 by 180 m (100 ft by 600 ft). Moving downstream in 2013, four cuts were mined, each 30 by 210 m (100 ft by 700 ft). Mining downstream and stripping upstream of 71 Pup throughout 2014, two major cuts were mined, 30 by 90 m (100 by 300 ft) and 30 by 300 m (100 by 1,000 ft). Approximately 30,000 yd³ (22 937 m³) of gravel was processed throughout the 2014 season.

EQUIPMENT AND WATER TREATMENT Equipment present on site included Fiat Allis HD31and HD41 bulldozers for stripping and John Deere 450C and 992 excavators for loading the two rocks trucks. A John Deere 270 excavator was used to feed the wash plant and Caterpillar 988A and 988B loaders were used to move tailings. The wash plant was a Model 200 Gold Machine which included a vibrating wet grizzly, turbo trommel, reverse helix, tail sluice, and side sluices. The plant is able to process 150 to 220 cubic yards (115 to 168 m³) per hour and is supplied with water at 1500 igpm by an 8 by 6" John Deere pump. Water was acquired from an intake ditch on Allgold Creek and effluent was settled in-stream through a pond measuring 61 by 213 m (200 by 700 ft) and 3.6 m (12 ft) deep. Clean ups were completed on a Model 200 Gold Machine slick plate and side sluice and panning of the final concentrate.

SURFICIAL GEOLOGY AND STRATIGRAPHY Frozen muck ranged from 2.4 to 4.6 m (8 to 15 ft) thick throughout the cuts. In 2013, the section included 2.1 m (7 ft) of pebble cobble gravel with medium grained, sandy matrix that appeared highly disorganized, overlain by 3.7 m (12 ft) of silt and organic rich overburden. Sluiced material included 0.6 to 1.2 m (2 to 4 ft) of gravel and up to 0.6 m (2 ft) of bedrock. On the right limit, approximately 150 m (46 m) downstream from the mouth of 71 Pup, the section is composed of 1.2 m (4 ft) of poorly sorted cobble pebble gravel, with subrounded to subangular clasts. Clasts comprise 80% (2% boulders, 35% cobbles, and 60% pebbles) and the matrix 20% (minor silt with fine to medium grained sand). The upper 0.3 m (1 ft) of the unit is pervasively oxidized and manganese staining is present throughout.

BEDROCK GEOLOGY Bedrock is quartzite and muscovite-calcite-schist.

GOLD CHARACTERISTICS Gold is flat, smooth, and coarse of which 50% is 12 to 20 mesh. Gold has an average fineness of 870.



Dulac Mining's gold machine on Allgold Creek in 2013.

Downstream view of Dulac Mining's operation at the mouth of 71 Pup in 2014.

Lucky, a tributary of Allgold

115O/15 2010: 63°53'46"N, 138°43'08"W

Zgela, I., 2010-2013

Water License: PM05-487 (Active 2015)
Active Producer (2010-2013) **Operation no. 70**

Location Lucky Creek.

Work History and Mining Cuts Mr. Zgela was active from 2010 to 2013, stripping on the left limit in 2010, 1 km upstream Lucky Creek from its confluence with Allgold Creek. Aside from stripping and his presence on the property throughout the years, no specific work history is known. No activity occurred in 2014.

Equipment and Water Treatment Not reported.

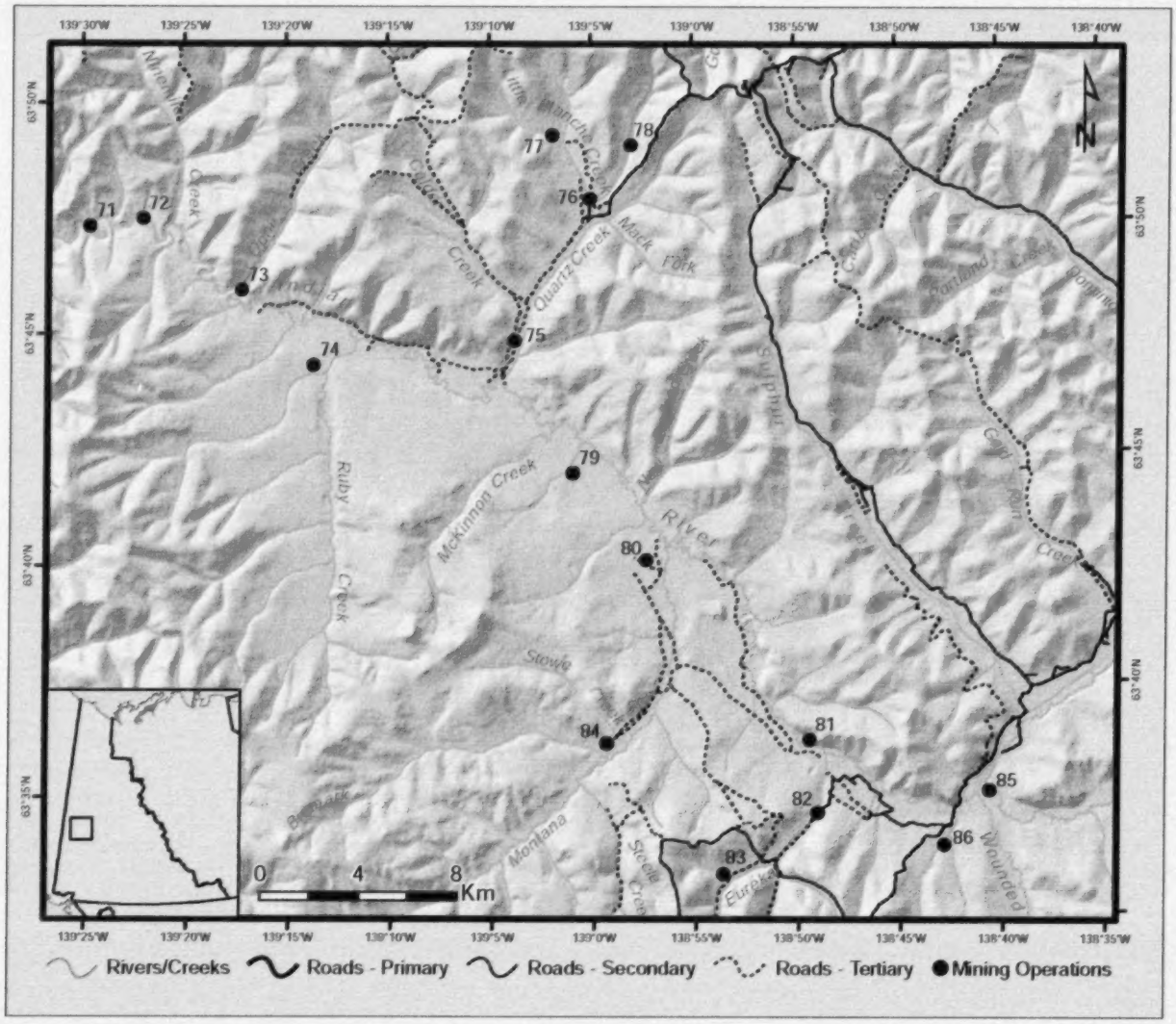
Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite and quartz-muscovite-calcite schist (Mortensen, 1996).

Gold Characteristics Not reported.

INDIAN RIVER
PLACER AREA

SITES 71-86



LEGEND

71 ..... M2 Gold Mines Ltd.
72 ..... McBurney, D.
73 ..... DNS Gold Wash Canada Inc.
74 ..... Northern Exposures Inc.
75 ..... McNeil, G.
76 ..... Schmidt Mining Corp.
77 ..... 40430 Yukon Inc.
78 ..... Tim Coles Enterprises Ltd.
79 ..... Gimlex Enterprises Ltd.
80 ..... Klondike Star Mineral Corporation Ltd.
81 ..... Tamarack Inc.
82 ..... Fine Gold Resources Ltd.
83 ..... Them R Gold Ltd.
84 ..... CTS Earthwork Ltd.
85 ..... Abermeth, G.
86 ..... Carey, R. and L.

INDIAN, A TRIBUTARY OF YUKON

115O/14 2013: 63°47'26"N, 139°28'36"W

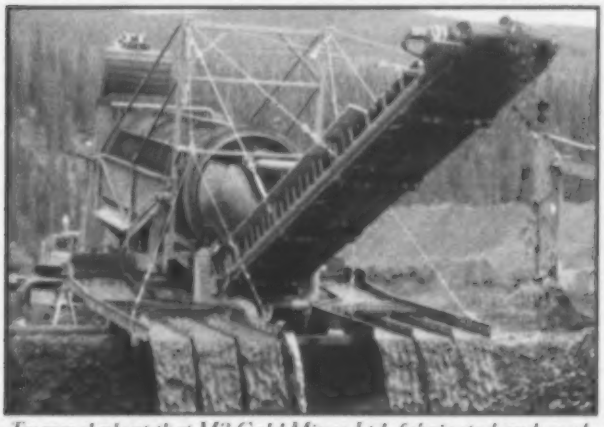
M2 Gold Mines Ltd., 2012-2014

Water License: PM06-535-1 (Closed 2012)
Water License: PM06-535-2 (Active 2017)
Active Producer (2012-2014) **Operation no. 71**

LOCATION Indian River, approximately 13 km upstream from its confluence with Yukon River.

WORK HISTORY AND MINING CUTS No activity was recorded in 2010 or 2011, other than a transfer of the lease from Mr. Hambrook to Rical Mining Ltd. in early 2011. The lease was then transferred from Rical Mining to M2 Gold Mines Ltd. in early 2012. M2 Gold Mines Ltd. consists of five crew members who worked two daily ten-hour shifts in 2012. They mined 37 cuts in 2012, adding up to an area covering 42 m wide by 23 m long (140 ft wide by 75 ft long) and 40 cuts in 2013 covering an area of 42 m wide by 27 m long (140 ft wide by 90 ft long). In 2014, mining continued on a left limit bench of the Indian River.

EQUIPMENT AND WATER TREATMENT Equipment located on site included a Caterpillar D9N bulldozer with u-blade and ripper, a Hitachi 290 excavator with a 1.1 m^3 (1.45 yd^3) bucket, and a Hitachi 240 excavator with a 1.3 m^3 (1.65 yd^3) bucket. In 2013, a Hitachi 330 excavator with a 1.4 m^3 (1.8 yd^3) bucket was acquired. The 5 ft diameter New Zealand style trommel plant with hydraulic riffles was replaced by a 7 ft diameter mobile New Zealand style trommel plant. The new plant had a total sluice length of 4.9 m (16 ft) and expanded metal and 1" wide angle iron riffles underlain by Nomad matting. The plant is self-propelled and mounted on tracks with a hydraulic drive. The 2012 plant processed up to 100 loose cubic yards (76 m^3) per hour, while the larger 2013 plant processed 100 to 140 loose cubic yards (76 to 107 m^3) per hour. Water was supplied at 800 to 1200 igpm by a 6 by 6" Cornell 6HNTA pump powered by a 140 HP Iveco diesel engine. Sluice water was acquired from Indian River, upstream of the mining area and effluent was settled in old cuts and discharged back to Indian River as mining advanced upstream. Clean ups utilized a long tom and were completed on a table.



Trommel plant that M2 Gold Mines Ltd. fabricated and used in 2013 (Photo credit: Michael Cawood).

SURFICIAL GEOLOGY AND STRATIGRAPHY In 2012 and 2013, the section consisted of a clean, well-sorted cobble and sandy gravel with fine, silty-sand matrix and black muck. No boulders were present and the entire section was frozen. The cut thickness was variable but rarely exceeded 6.1 m (20 ft). Approximately 1.8 to 2.4 m (6 to 8 ft) of gravel was sluiced.

BEDROCK GEOLOGY The bedrock surface was smooth where present above the water course level, and varied from blocky to pervasively weathered. Bedrock is quartzite, graphite quartzite, and quartz-muscovite-calcite-schist (Mortensen, 1996).

GOLD CHARACTERISTICS Gold is flat with a medium to high aspect ratio and occasionally contains quartz inclusions. An abundance of garnet and magnetite is present. The size distribution is 11% +20 mesh, 36% -20 mesh to +30 mesh, 20% -35 mesh to +48 mesh, 11% -48 mesh to +60 mesh and 22% -60 mesh with few nuggets. The fineness is 810.

INDIAN, A TRIBUTARY OF YUKON

115O/14 2013: 63°47'43"N, 139°26'02"W

McBurney, D., 1994-2014

Water License: PM04-412 (Active 2015)
Active Producer (2010-2014) **Operation no. 72**

LOCATION Indian River, below Ninemile Creek.

WORK HISTORY AND MINING CUTS Three miners and one camp personnel worked twelve hour shifts. In 2010, Mr. McBurney mined a large 305 by 37 m (1000 by 120 ft) cut. Two cuts were mined in 2011 on the right limit, measuring 122 by 30 m (400 by 100 ft) and 213 by 37 m (700 by 120 ft). A 366 by 37 m (1200 by 120 ft) cut on the left limit flat was mined in 2012. Two cuts, measuring 305 by 37 m (1000 by 120 ft) and 30 by 46 m (100 by 150 ft), were also mined on the left limit in 2013.

A second operation was licensed under PM04-412 and site specific authorization given to M2 Gold Mines Ltd. In 2010, M2 mined a cut measuring 244 by 37 m (800 by 120 ft) on the left limit. In 2011, they continued to mine the left limit on a 305 by 37 m (1000 by 120 ft) cut. A 610 by 37 m (2000 by 120 ft) cut was mined in 2012 on the right limit above

Bertha Creek. M2 also mined a cut that measured 1219 by 37 m (4000 by 120 ft) on the left limit in 2013.

Equipment and Water Treatment Equipment present in 2013 included a Caterpillar D9G bulldozer with u-blade and ripper, a Hitachi ZX200 excavator, a Hitachi EX200-3 excavator, a Hitachi EX200-1 excavator, and a 30 m (100 ft) conveyor with a 0.9 m (3 ft) belt mounted on a 20 ton excavator. The conveyor was fed by an excavator and used to transport stripped and thawed overburden. The bulldozer was used for stripping, leveling tailings, and reclamation, while the excavators were used for stripping, sluicing, reclamation, and moving tailings. In 2012, a Hitachi 2 X 450 excavator was acquired to strip, move tailings, and feed the stripping conveyor. In 2013, a New Zealand style trommel was acquired, measuring 1.5 by 6.1 m (5 by 20 ft) with a mobile, self-powered, 12.2 m (40 ft) tailings conveyor mounted on dismantled 20 ton excavator tracks. Each side of the wash plant included sluice runs with sections consisting of 0.6 m (2 ft) wide by 1.8 m (6 ft) long angle iron, followed by 0.6 m (2 ft) wide by 1.8 m (6 ft) long expanded metal and finally 1.8 m (6 ft) wide by 1.8 m (6 ft) long hydraulic riffles. Water was supplied at 1000 igpm by a 6 by 6" Indeng pump powered by an Isuzu engine. The plant processed 100 cubic yards (76 m^3) per hour. Water was acquired from Indian River and effluent was settled out-of-stream in a 50 by 20 m (164 by 66 ft) pond. Clean ups were completed with a long tom and gold wheel.

Surficial Geology and Stratigraphy All ground is frozen with 0.6 to 2.4 m (2 to 8 ft) of pay gravels underlying 1.2 to 4.6 m (4 to 15 ft) of overburden which is composed primarily of silt, sand, and fine gravel. The sluice section consisted of 0.6 to 2.4 m (2 to 8 ft) of gravel and 0.3 to 1.8 m (1 to 6 ft) of bedrock.

Bedrock Geology Bedrock varies from soft and decomposed to hard and blocky quartz schist.

Gold Characteristics Gold is mostly fine, flakey, and flat with a fineness of 810.

Quartz, a tributary of Indian

115O/14 2014: 63°45'56"N, 139°07'04"W

DNS Gold-Wash Canada Inc., 2014

Water License: PM11-002-2 (Active 2021)
Active Producer (2014) **Operation no. 73**

Location Indian River, right limit, at the mouth of Ophir Creek.

Work History and Mining Cuts First year of activity was in 2014, where DNS Gold-Wash Canada Inc. operated with a crew of three miners. Sluicing occurred on the right limit of the Indian River and on a right limit bench.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, graphite-quartzite, and quartz-muscovite-calcite-schist (Mortensen, 1996).

Gold Characteristics Not reported.

Ruby, a tributary of Indian

115O/11 2013: 63°44'58"N, 139°16'48"W

Northern Exposures Inc., 2009-2014

Water License: PM04-446-1 (Active 2015)
Water License: PM04-368 (Active 2014)
Active Producer (2010-2014) **Operation no. 74**

Location Ruby Creek and Indian River.

Work History and Mining Cuts Minimal information is recorded under PM04-368 and no work history is documented for 2010. Northern Exposures Inc.'s property was mined by Mr. Schmidt from 2011 to 2013. Ground preparation began in the fall of 2010 when Schmidt Mining conducted stripping near the confluence of Ruby Creek and Indian River. On Ruby Creek, Schmidt Mining mined areas covering 46 451 m^2 (500,000 ft^2) in 2011 and 32 516 m^2 (350,000 ft^2) in 2012. Also in 2012, Schmidt Mining processed 19 695 m^2 (212,000 ft^2) opposite the mouth of Quartz Creek in the Indian River valley and mined a cut on the far left limit of the valley approximately 500 m west of the mouth of Ruby Creek. In 2011, Mr. McGregor mined approximately 16 km downstream of the mouth of Quartz Creek, under PM04-446. In 2013, Mr. McGregor mined up an unnamed left-limit tributary to Indian River, locally known as Kathleen Creek, while Schmidt Mining continued stripping at the mouth of Ruby Creek. In 2014, Mr. McGregor mined a 64 m by 111 m (211 ft by 366 ft) cut on a left limit bench of Kathleen Creek.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy On Ruby Creek, stripped overburden was generally 3.6 to 7.6 m (12 to 25 ft) thick. Material from a cut stripped by Schmidt Mining on Ruby Creek consisted of 4 m (13 ft) of pebble-cobble gravel

Mr. McGregor's active cut and wash plant on Indian River in 2013.

with silty sand matrix; the clasts were dominantly quartz, subangular to subrounded and pervasively oxidized at the bedrock contact. The left limit bench on Kathleen Creek, exposed in 2014, consists of 1.0 to 2.7 m (3 to 9 ft) of clast supported pebble cobble gravel overlain by up to 3 m (10 ft) of muck overburden. A coarse, muddy gravel that is 34 cm thick, rests on bedrock and contains large cobbles and small boulders up to 30 cm in length. Flow orientations preserved in the structure of the gravel suggests multiple sources may have contributed to its origin. In the upper gravel section, clast imbrication and cross bedding support an eastward flow, particularly on the south and west wall of the cut. In the northeast corner of the cut the flow orientation is clearly to the north, sub-parallel to Kathleen Creek. In the northwest corner of the cut the gravel nearly pinches out. An analysis of satellite imagery indicates that the cut was excavated near the mouth of a small east-northeast trending tributary to Kathleen Creek (582721 E, 7070874 N). A component of the gravel in the cut is likely sourced from this tributary, especially the upper sections of the gravel, although it is unknown if it supplies placer gold. The thin, coarse, muddy gravel on bedrock did not have a clear flow direction and is assumed to be sourced from Kathleen Creek.

Bedrock Geology Bedrock in the vicinity of Ruby Creek is quartzite, graphite quartzite, and quartz-muscovite-calcite schist (Mortensen, 1996). On the Kathleen Creek bench the bedrock is a friable, dark grey shale containing 20 cm thick layers of white marl. The shale bedrock surface dipped slightly to the south and east.

Gold Characteristics Not reported.

View to the northwest looking over Northern Exposure's left limit cut (see arrow) on Kathleen Creek in 2014. The Indian River is in the background.

Quartz, a tributary of Indian

115O/14 2014: 63°45'56"N, 139°07'04"W

McNeil, G., 2005-2006, 2011-2014

Water License: PM03-353 (Active 2014)
Water License: PM14-015 (Active 2024)
Active Producer (2011-2014) **Operation no. 75**

Location Quartz Creek, Indian River, Calder Creek, and Toronto Creek.

Work History and Mining Cuts Three operations were active under PM03-353 in 2011 and 2012: Mr. McNeil's Quartz Creek operation, upstream of Toronto Creek; an operation at the mouth of Toronto Creek; and Schmidt Mining's operation on leased ground along Indian River. Schmidt Mining conducted stripping and sluiced material from an area totaling 24 340 m² (262,000 ft²) in 2011; they also mined throughout the season and completed reclamation of their first two cuts in 2012. Mining and reclamation was completed at the Toronto Creek operation by the end of the 2012 season. Mr. McNeil was active in 2013 and 2014 but no other work history is documented under PM03-353.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy At the ground leased by Schmidt Mining Corp., the surficial geology consisted of 3.6 to 4.6 m (12 to 15 ft) of muck and gravel overlying bedrock. Sluice material included 1.2 m (4 ft) of gravel and 0.6 m (2 ft) of bedrock.

Bedrock Geology Bedrock is quartzite, graphite-quartzite and quartz-muscovite-calcite-schist (Mortensen, 1996).

Gold Characteristics Not reported.

Mr. McNeil's plant on Quartz Creek in 2012 (Photo credit: Jim Leary).

Quartz, a tributary of Indian

115O/14 2013: 63°49'11"N, 139°04'09"W

Schmidt Mining Corp., 2009-2014

Water License: PM03-332A (Active 2014)
Water License: PM13-029 (Active 2024)
Active Producer (2010-2014) **Operation no. 76**

Location Quartz Creek, Little Blanche Creek, Calder Creek, and Canyon Creek.

Work History and Mining Cuts The Schmidt Mining Corp. base camp is located on Quartz Creek near the mouth of Calder Creek and operated twenty-four hours a day during the 2010 to 2014 mining season. Activity in 2010 consisted of mining several benches and the upper reaches on Little Blanche Creek and Quartz Creek. Mining also occurred on the Indian River both above the mouth of Quartz Creek and near Ruby Creek. On Little Blanche Creek, material from an area covering 27 870 m² (300,000 ft²) was mined in 2011. No mining occurred in 2012. In 2011, upstream of Gimlex Gold Mines Inc., Schmidt Mining stripped an area covering 89 187 m² (960,000 ft²) and finished mining in 2012. Stripping was conducted on the Quartz Creek bench from 2010 to 2012 and an area approximately 9 290 m² (100,000 ft²) was mined on the lower end of the bench in 2012. From 2010 to 2013, hydraulic monitoring occurred on upper Quartz Creek in two locations. Hydraulic monitoring also commenced on Canyon Creek in August 2012. In 2013, the right limit of upper Quartz Creek was sluiced and monitoring and stripping continued at upper Quartz Creek and on Canyon Creek. In 2014, stripping and mining continued on the right limit bench of Quartz Creek. Hydraulic monitoring and mining also occurred on the left limit of Canyon Creek near its confluence with Little Blanche Creek.

Equipment and Water Treatment Equipment on site included two Caterpillar D10N crawler tractors, one Caterpillar D11R crawler tractor, one Caterpillar D9L crawler tractor, two Hitachi EX700 excavators, one John Deer 450 excavator, one rock truck, two conveyors with 1.5 m (5 ft) wide by 45.7 m (150 ft) long belts, and one feeder with a 1.5 m (5 ft) wide by 18.3 m (60 ft) long belt. Another conveyor with a 1.2 m (4 ft) wide by 30.5 m (100 ft) long belt was used for sluicing in conjunction with a portable sluice plant. The wash plant has a 2.4 m (8 ft) wide trommel with 1.1 m (3.5 ft) wide conveyor for oversize removal. Three 1.2 m (4 ft) wide sluice runs, totalling 7.3 m (24 ft) in length, were located on each side of the conveyor. The wash plant processed up to 200 loose cubic yards (54 m³) of gravel per hour and was moved every one to two days.

Surficial Geology and Stratigraphy The stratigraphic section on the left limit of Canyon Creek near its confluence with Little Blanche Creek consists of two general units. Unit 1, deposited on bedrock, is 2 m (6.5 ft) of sandy pebble-cobble gravel containing imbricated flat schist clasts. Subangular cobble-size clasts of quartz are also present. Gravel beds are interbedded with sand beds and lenses. Bedrock was not exposed during the visit so the true thickness of unit 1 is likely greater than 2 m (6.5 ft). Unit 2 consists of 21 m (69 ft) of muck overburden. Woody organic rich layers are more common near the base of the muck unit. A thaw unconformity is present in the middle of the muck unit where 2 by 2 m (6.5 by 6.5 ft) pods of loess-rich sediment are tilted and encased in massive ice. The muck overburden contains beds of weathered bedrock colluvium in places where bedrock is closer to the surface.

On Little Blanche Creek the 2010 section consisted of 1.5 m (5 ft) of gravel overlain by 3.0 to 6.1 m (10 to 20 ft) of muck. The sluiced component consisted of 1.5 (5 ft) of gravel and 0.9 (3 ft) of bedrock.

On the Indian River 1.2 m (ft) of pay gravel is overlain by 3.6 to 4.6 m (12 to 15 ft) of gravel and muck overburden. In addition to the pay gravel, 0.6 m (2 ft) of bedrock was sluiced.

The right limit Quartz Creek bench cuts exposed a complete section of White Channel gravel. The White Channel gravel could be subdivided into two general units consisting of an upper yellow gravel and a lower grey gravel on bedrock. The yellow gravel is up to 13 m (42.5 ft) thick and is a matrix supported cobble-pebble gravel with crude bedding. The lower grey gravel is a decomposed, matrix supported gravel that is 10 m (33 ft) thick. Continuation of work on the cut, in 2014, exposed a 3 to 4 m (10 to 13 ft) wide, vertically oriented, mafic dike extending 10 m (33 ft) into the lower grey gravel. The dike edges are weathered whereas the interior of the dike contains spheriodally weathered dike clasts and unweathered resistant components. The orientation of the dike is 44 to 224° and has drawn up the orthogneiss country rock and decomposed White Channel gravel along its margins. It is uncertain whether the dike is a bedrock slice tectonically thrust into the lower White Channel or is an igneous intrusion. The top of the dike is overlain by a layer of grus that appears to be a colluviated equivalent of it. This would suggest that the dike was emplaced into the paleo-surface of the floodplain and occurred prior to deposition of the overlying yellow gravel. Where the dike is in contact with the grey gravel there appears to be flow-like features encasing quartz clasts. In addition, some quartz clasts are fractured near the contact with the dike. This evidence supports an intrusion history rather than a tectonic thrust emplacement into the lower White Channel gravel. This has implications for potentially dating the lower White Channel gravel and will be the focus of additional research.

Monitoring at the mouth of Canyon Creek in 2013 (Photo credit: Stuart Schmidt).

An aerial photograph from 2014 with a view to the west of Schmidt Mining's Quartz Creek bench. The mafic dike is visible in the lower White Channel gravel behind the wash plant (see arrow). Prolific old timer workings were present in this area.

Bedrock Geology Bedrock varies between gneiss, quartzite, and muscovite-calcite-schist.

Gold Characteristics Gold on Little Blanche Creek is primarily fine-grained with an average fineness of 650. Gold recovered from Indian River valley is also fine-grained with a fineness of 810. The Quartz Creek bench gold fineness averages 750.

Little Blanche, a tributary of Quartz

115O/14 2013: 63°50'28"N, 139°06'20"W

40430 Yukon Inc., 2007-2014

Water License: PM08-602 (Active 2019)
Active Producer (2010-2014) **Operation no. 77**

Location Approximately 2.6 km upstream from the mouth of Little Blanche Creek.

Work History and Mining Cuts 40430 Yukon Inc. ran a small operation on the left and right forks of Little Blanche Creek from 2010 to 2013 but no specific work history is recorded for 2010 and 2012. In 2011, sluicing was conducted on the right fork and stripping took place on the left fork bench of Little Blanche Creek. Schmidt Mining Corp. also leased ground on Little Blanche Creek in 2011 and completed hydraulic and mechanical stripping and some sluicing. In 2013, stripping occurred above the mouth of Little Blanche Creek on the left limit, over an area of approximately 100 by 200 m (328 by 656 ft). Mining was also conducted in the valley bottom, downstream of the fork, as was monitoring, on the left fork of upper Little Blanche Creek, along the main channel and a bench. Activity in 2014 included monitoring and mining on the left fork of Little Blanche Creek.

Equipment and Water Treatment Equipment present on site in 2013 included a Caterpillar D8K bulldozer, a John Deere 992D LC excavator, and a New Zealand style trommel measuring 1.2 by 6.1 m (4 ft by 20 ft) which processed 40 loose cubic yards (30.6 m^3) of gravel per hour. An in-stream system of reservoirs and settling ponds was used to treat effluent.

Surficial Geology and Stratigraphy On the left fork bench, 0.3 to 4.8 m (1 to 16 ft) of gravel was overlain by 0.6 to 1.2 m (2 to 4 ft) of overburden. In the valley bottom, the section consisted of 4.6 m (15 ft) overburden above 0.6 m (2 ft) of pay gravel.

Bedrock Geology Bedrock is quartzite, quartz-muscovite-cl schist, gneiss, and amphibolite (Mortensen, 1996).

Gold Characteristics Gold is dull, contains 33% silver and has a bulk fineness of 650.

40430 Yukon Inc. mining on the left fork of Little Blanche Creek in 2014.

Canyon, a tributary of Little Blanche

115O/14 2013: 63°50'26"N, 139°02'26"W

Tim Coles Enterprises Ltd., 2009, 2011-2014

Water License: PM07-572 (Active 2018)
Active Producer (2011-2014) **Operation no. 78**

Location Canyon Creek, upper.

Work History and Mining Cuts Mr. Coles and two miners mined the main channel of Canyon Creek in 2011. An auger drill was used to complete 914 m (3,000 ft) of drilling upstream to help identify the center-line of the pay channel, which was determined to be 12 m (40 ft) wide. Stripping and mining continued in 2012 and 2013. They sluiced approximately 400 hours per year and mined roughly three claims. In 2014, the operation was moved temporarily over to Boulder Hill on Bonanza Creek, however they returned to Canyon Creek in mid-summer. Mining continued in two locations, at the upper and lower end of the claim block, for the remainder of 2014.

Equipment and Water Treatment Equipment on site in 2011 included a Caterpillar D9 bulldozer to strip and push pay, and two excavators, one to feed the sluice and the other to remove tailings. The wash plant was a 4 ft diameter trommel with an oscillating sluice deck, able to process 50 loose cubic yards (38 m^3) of material per hour with a water consumption of 1200 to 1500 gpm.

Surficial Geology and Stratigraphy The stratigraphy of Canyon Creek consists of three general units. The main pay on bedrock from 0 to 1 m (0 to 3.3 ft) is a yellow weathered clay bedrock containing fluvial cobbles. From 1 to 2 m (3.3 to 6.6 ft) is a cobble gravel with minor boulders. This unit is also considered pay. Overlying the pay units from 2 to 8 m (6.6 to 26.2 ft) is muck with colluviated weathered bedrock layers. The valley is quite narrow and to remove the muck the excavators need to throw the overburden two or three times up the slope in order to create a wide enough mining cut.

Bedrock Geology Bedrock is chlorite schist with quartz veining.

Gold Characteristics There is very little black sand in the concentrate and mostly garnets occurred with the gold.

Indian, a tributary of Yukon

115O/11 2013: 63°43'14"N, 139°03'27"W

Gimlex Enterprises Ltd., 2004-2014

Water License: PM95-077 (Active 2014)
Active Producer (2010-2014) **Operation no. 79**

Location Indian River valley, approximately 1.6 km upstream from the confluence with McKinnon Creek.

Mr. Coles' operation on Canyon Creek in 2011.

Work History and Mining Cuts The Christie family operated a large camp in the Indian River valley which operated 1 to 2 twelve-hour shifts per day, depending upon the availability of thawed pay. Personnel included five to ten miners, four welders and/or mechanics, and one cook with a helper. Mining cuts were a maximum size of 274 by 152 m (900 by 500 ft) but optimum cut size was 183 by 183 m (600 by 600 ft). The use of conveyors greatly increased the processing capacity and reduced the number of plant moves per season. From 2010 to 2014, there were three set-ups per season and annual material mined covered an area onaverage of 92 903 m² (1,000,000 ft²).

Equipment and Water Treatment Equipment included two Komatsu D475 bulldozers, one Komatsu D275 bulldozer, one Komatsu D155 bulldozer, four Komatsu WA600 loaders, two Komatsu PC400 excavators, one Komatsu PC200 excavator, one Caterpillar 235 excavator, one Caterpillar 14 grader, and one International dump truck. All bulldozers were equipped with u blades and rippers and the Komatsu D475 blades were rated at 45 cubic yards (34 m³) while the Komatsu D275 blade was rated at 17 cubic yards (13 m³). Additional equipment present on site included a Nodwell mounted hydraulic auger drill, a Bombardier tracked drill support vehicle, five mechanical service/welder trucks (two outfitted with cranes), two Hiab equipped flat deck trucks, one long deck pipe truck, four forklifts and one 40 ton rough terrain crane. Ten conveyors were also present, ranging from 18.3 to 24.4 m (60 to 80 ft) long: four El Russ, three Kolman, two Mormack, and one Hillside. Conveyors were used to feed the sluice plant, transport pay, and remove waste material, and they were loaded by belt feeders or an apron feeder. The wash plant consisted of a 4 by 16 ft El Russ double deck screen inclined 10°, above a skid-mounted sluice plant designed and built by Gimlex. A custom built washer chute was above the screen deck, and was lined with heavy rubber and urethane panels from Durex Camline. The 3" upper section screens were custom built by Durex Camline and the 2" lower section screens were a stock Western Screen product. Western Screen urethane stock screens with 14 mm square openings were used on the lower deck. A 10.6 m (35 ft) conveyor was used to discharge rocks that did not pass through the screens, while the fines channelled through the sluice runs in a 'Z' configuration.

Aerial view over Gimlex Enterprises Ltd. mine on the Indian River valley. Through comprehensive exploration auger drilling, low grade "islands" are avoided and used for storing fine-grained overburden. This method limits peripheral disturbance and facilitates reclamation.

The top two sluice runs measured 1.2 by 6.1 m (4 by 20 ft) with 1" angle iron and flat bar riffles on unbacked Nomad matting. These then fed three, 1.2 by 9.7 m (4 by 32 ft) runs with six pound expanded metal, also on unbacked Nomad matting. Feed rate varied from 200 to 370 loose cubic yards (153 to 283 m^3) of gravel per hour, with an average rate of 275 cubic yards (210 m^3) per hour. Water was supplied at 4000 to 5000 igpm by a 10 by 12" Morris pump powered by a Caterpillar 3408 diesel engine. Sluice water was acquired from runoff and seepage draining into a large recycle pond/channel system. Effluent is 100% recycled in a large multi-pond system and when a cut is completed, it is added to the pond/channel system before being backfilled. Clean-ups were completed every forty to forty-eight hours, using large aluminum tubs to wash mats and a live box for further processing. The concentrate is then upgraded using a panning wheel, sieve or pan with magnets, while a shaker table and other equipment is used as required.

Surficial Geology and Stratigraphy Indian River valley is underlain by permafrost which ranges from 3 to 12 m (10 to 40 ft) thick and thaws to depths of 0.3 to 1.2 m (1 to 4 ft) during the summer, although areas subject to surface or ground water flow thaw deeper. The lowest stratigraphic unit is composed of 1.5 m (5 ft) of grey cobble gravel with occasional boulders and mud layers often found in association with the bedrock contact. This is overlain by 2.5 m (8.2 ft) of reddish brown sand and sandy pebble gravel with mud layers and cross bedding. Overburden capping the section consists of 2 to 12 m (6 to 40 ft) of muck and is composed of minor peat and mud interlayered with silty ice rich loess and muddy sand. On average, 1.2 to 1.8 m (4 to 6 ft) of gravel and 0.3 to 0.9 m (1 to 3 ft) of bedrock are sluiced. While all of the gravel contains some fine gold, not all of it is high grade enough to sluice, so the pay zone is predetermined through auger drilling. Gravel with larger cobbles generally yields better grades.

Active cut at Gimlex Enterprises Ltd. in 2011.

Bedrock Geology Bedrock varies between highly deformed schist, semi-schist, and augen gneiss of intermediate metamorphic grade. Schist is muscovite, biotite, and chlorite rich, and often decomposes to clay. The bedrock surface is primarily soft and highly decomposed but transitions into hard, highly fractured rock which traps placer gold.

Gold Characteristics Gold is fine, flat, and 95% -12 mesh in size. Nuggets are small and generally rough, but some are smooth and flat. The fineness is 810 to 830.

Indian, a tributary of Yukon

115O/10 2014: 63°41'30"N, 138°59'22"W

Klondike Star Mineral Corporation Ltd., 2005-2007, 2012-2013

Water License: PM06-546 (Active 2017)
Active Producer (2012-2013) **Operation no. 80**

Location Indian River and Montana Creek.

Work History and Mining Cuts No work history or activity is reported from 2010 to 2011, therefore the operation is presumed inactive in those years. In 2012, Klondike Gold Corp. leased ground from Klondike Star Mineral Corporation Ltd. and mined an area that was previously drilled in 2005 to 2007. Sluicing and drilling occurred throughout the 2012 season but specific details are unknown. In 2013, the operation increased to an eleven personnel crew and conducted extensive stripping and sluicing.

Equipment and Water Treatment No equipment details were reported. Three bulk test pits from 2007 and 2008 were incorporated into the pump pond and recirculation system.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock varies between dunite, diabase, quartzite, and quartz-muscovite schist (Bostock, 1942).

Gold Characteristics Not reported.

Indian, a tributary of Yukon

115O/10 2014: 63°38'00"N, 138°50'24"W

Tamarack Inc., 2009-2014

Water License: PM08-618 (Active 2019)
Active Producer (2010-2014) **Operation no. 81**

Location Indian River, right limit, 1.5 km downstream from the mouth of Eureka Creek.

Work History and Mining Cuts Mr. Beets operated opposite the mouth of Eureka Creek on the right limit of Indian River. Dredge construction occurred in 2014, with intent to operate during the 2015 season.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, schist, gneiss, and amphibolite (Bostock, 1942).

Gold Characteristics Not reported.

Eureka, a tributary of Indian

115O/10 2014: 63°37'25"N, 138°49'51"W
115O/10 2013: 63°33'52"N, 138°51'33"W
115O/10 2013: 63°36'27"N, 138°49'37"W

Fine Gold Resources Ltd., 2008-2014

Water License: PM05-489 (Expired 2015)
Water License: PM06-536 (Expired 2017)
Water License: PM10-001 (Expired 2020)
Active Producer (2010-2014) **Operation no. 82**

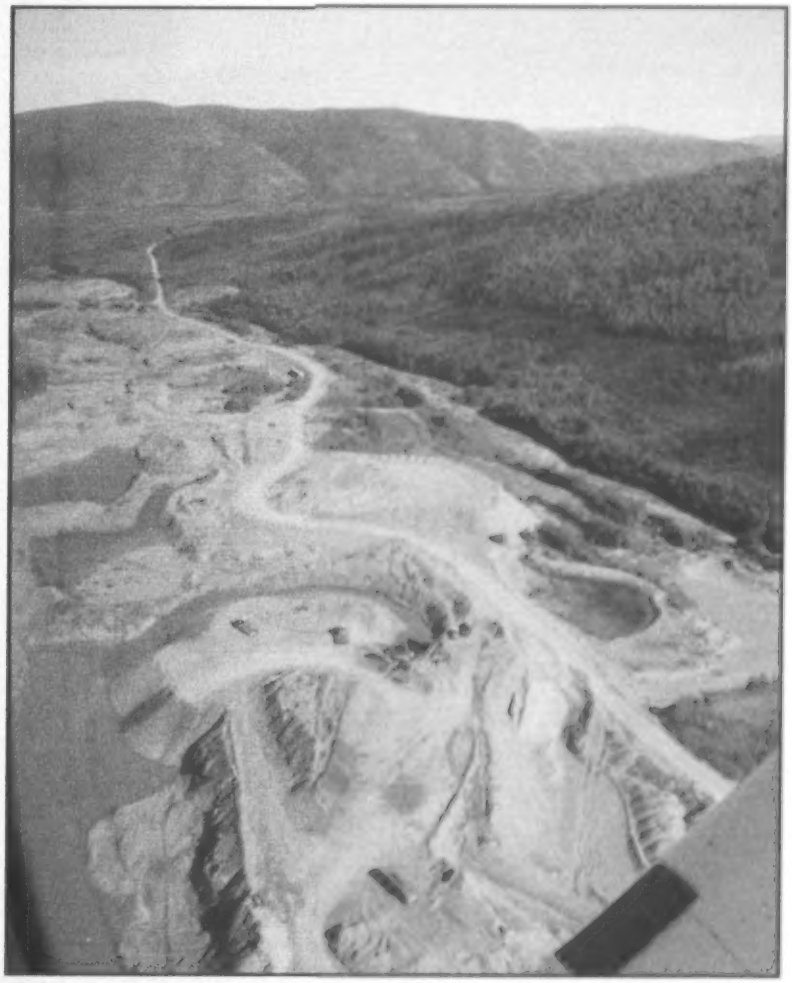
Location Indian River and several locations on Eureka Creek: the mouth of Eureka Creek; a left limit bench approximately 4 km upstream from the mouth of Eureka Creek; an upper left fork near Eureka Dome; and a left limit bench on the Indian River immediately downstream of Eureka Creek.

Work History and Mining Cuts The operation expanded each year during the 2010 to 2013 period. The 2013 crew consisted of sixteen miners and two camp personnel working two twelve hour shifts daily when sufficient pay dirt was available. In 2010, the operation was relocated downstream from a mid-valley left limit bench to the right limit near the mouth of Eureka Creek. Positive results from drilling and less overburden prompted the move. Mr. Heisey and his crew mined at this location from 2010 to 2013. A large pit at

View to the west at Fine Gold Resources Ltd. operation at the mouth of Eureka Creek in 2014. The cut in the top right corner is the left limit bench of the Indian River.

the mid valley left limit bench was also mined in 2011 and 2012, and a left limit bench on the Indian River, immediately downstream of Eureka Creek, was mined in 2012 to 2014. In 2012, Fine Gold Resources Ltd. acquired Eureka Placers' operation on the right and left forks of Eureka Creek and extending up to the summit. The left fork was mined in 2012 and 2013. Mr. Heisey also leased claims from Tusk Exploration on the Indian River in 2011, terminating at the end of 2013. Mr. Crawford mined approximately 3.2 km upstream of Eureka Creek on the left limit that had previously been mined by Mr. Ferguson. Approximately 305 822 m^3 (400,000 yd^3) of material was stripped and 45 873 m^3 (60,000 yd^3) was sluiced in 2010 with production increasing to 764 555 m^3 (1,000,000 yd^3) stripped and 152 911 m^3 (200,000 yd^3) sluiced in 2013.

Equipment and Water Treatment In 2010, three Caterpillar D9H bulldozers with U blades and rippers were used for stripping, ripping, pushing pay, stacking tailings, building settling ponds, reclamation work, repairing roads, and improving the existing runway. Additional equipment included two Hitachi 400 series excavators, three rock trucks (Cat 769B, Cat D550, Cat 773B), and a Komatsu WA500 loader. The excavators and trucks were used for a part of the stripping work and for hauling pay gravel to the plant. A Komatsu 475 bulldozer, a Hitachi 450 excavator, and another Komatsu WA500 loader were acquired in 2011, and a Komatsu 275 bulldozer, another Hitachi 450 excavator, and a Komatsu HM400 rock truck were acquired in 2012. Equipment acquired in 2013 included a Komatsu 375 bulldozer, another Komatsu WA500 loader, and a Komatsu HM400 rock truck. Three wash plants were utilized on the property: an Elrus 5 by 12 ft double screen deck shaker plant powered by a 30 hp motor and fed by a belt driven feeder with a 20 cubic yard (15 m^3) hopper; a 6 ft diameter by 35 ft trommel mounted on a highboy trailer, powered by a 30 hp motor and fed by a belt driven feeder with a 20 cubic yard hopper; and a 6 by 20 ft skid mounted trommel, powered by a diesel engine. The shaker deck processed approximately 150 cubic yards (115 m^3) per hour, and the trommels processed between 75 and 125 cubic yards (57 and 95 m^3) per hour, depending on the type of material. The sluice boxes measured 18 ft in width on the shaker plant, and 12 ft and 8 ft in width at the two trommels. Each of the sluice boxes included expanded metal at the top for day riffles, slick plate, boil boxes, and hydraulic riffles. Water was obtained from Eureka Creek and pumped at 1500 igpm by an 8 by 10" Fairbanks Morse pump powered by a Caterpillar 3306 engine, a 2000 igpm 10 by 12" Morris pump powered by a Cat 3406 engine, and a Thompson 1000 igpm 6 by 6" pump. Slurry was settled in out-of-stream settling ponds prior to returning to Eureka Creek, except for the upper left fork where in-stream settling was required due to the narrow valley. Clean ups were performed daily using a "Lizotte live-bottom box" concentrating machine, a 4 ft diameter PMX gold wheel, an RP-4 shaker table, and a Miller Dredge rinsing/finishing table.



Downstream view of activity on Eureka Creek in 2013.

Surficial Geology and Stratigraphy The stratigraphic section at the mouth of Eureka Creek consists of 1.2 to 2.4 m (4 to 8 ft) of gravel underlying 4.6 to 18.3 m (15 to 60 ft) of organic muck overburden, with a thick layer of volcanic ash present at approximately 6.1 m (20 ft). At the left limit bench on Eureka Creek, 3 m (10 ft) of organic rich loess overlies 27 m (90 ft) of interbedded pebble-cobble gravel, sandy diamict, alluvium, and colluvium with clast size increasing with depth. Pay consists of 2.4 m (8 ft) of highly oxidized gravel and 1.2 m (4 ft) of bedrock, as well as a boulder rich unit located 7.6 m (25 ft) from the bottom of the cut. On the upper left fork of Eureka Creek, 1.2 to 1.8 m (4 to 6 ft) of pebble-cobble gravel are overlain by 7.6 to 10.7 m (25 to 35 ft) of frozen black muck. On the Indian River bench, 4.6 m (15 ft) of black muck overlie 0.6 to 1.2 m (2 to 4 ft) of gravel above bedrock. Sand lenses are present in the gravel unit between 0.6 to 1.2 m (2 to 4 ft). Gold was identified at the bedrock contact and within the highly fractured schist. An abundance of garnets were encountered in the Indian River during clean-ups. In 2014, the Indian River bench cut was expanded downstream. Bedrock was exposed in two levels with a height difference of 2.3 m (7.5 ft) separating the levels. In the upper bench the stratigraphy consists of 1 m (3.3 ft) of muck and mixed angular and rounded clasts overlying 5.8 m (19 ft) of Indian River gravel. The gravel contains predominantly pebbles and cobbles and the gravel is variably oxidized, likely by groundwater from Eureka Creek. The oxidation is less pronounced downstream on the bench. The gravel is moderately sorted, stratified, and in places grades into a cross-bedded sand. There is a prominent laterally extensive silt layer containing organics at 2.6 m (8.5 ft) above the bedrock surface. The silt is 20 to 40 cm thick and in places is cryoturbated into a diamict when mixed with gravel. The silt unit is partly soliflucted muck and overbank flood deposits. Rip up pods of silt are incorporated into the gravel suggesting bank erosion processes. The stratigraphy and sedimentology of the bench is consistent with a meandering river system. Placer gold in this location is likely derived from Eureka Creek and the Indian River. Air photo analyses suggests the bench may have greater width than has been exploited. Additional testing to the south is recommended.

Bedrock Geology Bedrock is decomposed quartz-muscovite schist.

Gold Characteristics Gold recovered from the Indian River is primarily fine grained, dark yellow, and has a purity of 850. Eureka Creek gold is approximately 20% coarse and 80% fine with some small nuggets. Coarse gold is rough and commonly attached to quartz. Colour varies from bright, shiny yellow to dark red-brown, suggesting two different lode sources. Fineness ranges from 780 at the mouth of Eureka Creek to 740 in mid-valley and 700 on the upstream forks.

Unnamed, a tributary of Eureka

115O/10 2014: 63°34'55"N, 138°53'54"W

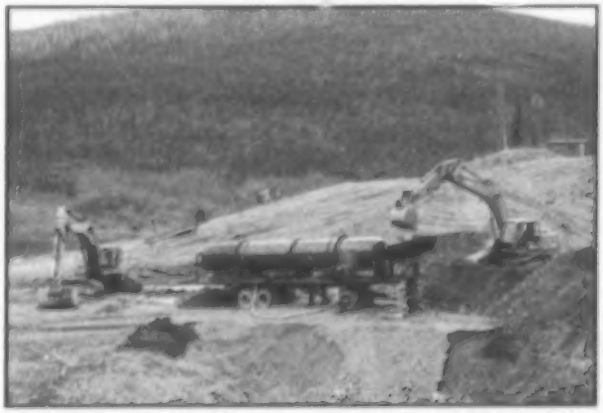
Them R Gold Ltd., 2012-2014

Water License: PM06-525 (Closed 2012)
Water License: PM06-525-1 (Active 2016)
Active Producer (2012-2014) **Operation no. 83**

Location Left limit bench on the right fork of Eureka Creek, approximately 7 km from the mouth of Eureka Creek.

Work History and Mining Cuts Between five and eight miners and one camp personnel worked a daily twelve hour shift during the 2012 to 2014 seasons. Twelve cuts were mined in 2012 and 2013, each measuring an average of 30 by 70 m (100 by 200 ft). In 2014, two cuts 30 by 30 m (100 by 100 ft) and 30 by 60 m (100 by 200 ft) were mined.

Equipment and Water Treatment Equipment present on site in 2014 included a Caterpillar D8K bulldozer, D9H bulldozer, Caterpillar D9G bulldozer, Hitachi 220 excavator and Hitachi 400 excavator. The wash plant consisted of a 40 ft trommel with a 5 ft barrel, processing 60 loose cubic yards (45 m^3) per hour. Water was acquired from the right fork of Eureka Creek using a 6" Indeng pump powered by a Detroit diesel engine. Effluent was treated in-stream and was 100% recycled using four ponds each measuring 30.5 by 70.0 m (100 by 200 ft). Clean-ups were conducted using a jig and table.



Them R Gold Ltd. wash plant on Eureka Creek (Photo credit: Marie Charbonneau).

Aerial view of Mr. Cahoon's operation on upper Eureka in 2013.

Surficial Geology and Stratigraphy The bench consists of 21 m (70 ft) of cobble gravel with 5% boulders, 60% cobbles, and 35% pebbles, and a medium grained sandy matrix. Clasts range from subangular to subround with the maximum boulder-size in the section reaching 0.4 m (1.3 ft). Lenses of interbedded silty fine-grained sand up to 1 m (3.3 ft) are present throughout the section, with varying oxidation and pervasive manganese alteration in the lower 9 m (30 ft) of the section. Overburden is minimal at a few feet and consists of loess with minor organics. Up to 3.0 m (10 ft) of gravel and 1.8 to 2.4 m (6 to 8 ft) of bedrock was sluiced.

Bedrock Geology Bedrock is decomposed quartz muscovite schist.

Gold Characteristics Gold is coarse and hackley, as well as smooth, and has an average fineness of 700.

Stowe, a tributary of Montana

115O/11 2014: 63°37'28"N, 139°00'19"W
115O/11 2013: 63°38'53"N, 139°03'19"W

CTS Earthwork Ltd., 2012-2014

Water License: PM07-594-1 (Active 2018)
Active Producer (2012-2014) **Operation no. 84**

Location Stowe Creek, 4 km upstream from the confluence with Montana Creek.

Work History and Mining Cuts In 2011, Last Chance Placers Ltd. stripped along the right limit of Stowe Creek, with no recorded sluicing. Mr. Klippenstein operated on Stowe Creek in 2012, stripping along the right limit. CTS Earthworks Ltd. operated its first season on the creek in 2013, mining upstream of the previous workings. Two cuts measuring 22.9 by 106.7 m (75 by 350 ft) and 18.3 by 61.0 m (60 by 200 ft) were processed. In 2014, four miners operated on a left limit bench of Montana Creek and mined a total of six cuts. A cut in the middle of the valley on Stowe Creek was also stripped and mined.

Equipment and Water Treatment Equipment present in 2014 included a Caterpillar D8K bulldozer with single shank ripper and U blade, a Kobelco SK250 excavator with 1.5 yd bucket, Hitachi 270 excavator with 1.75 yd bucket, and Ford L9000 dump truck. The wash plant consisted of a 8 by 16 ft hopper, and a 5 by 12 ft Elrus screen deck, and a single upper 4 by 6 ft sluice run with 1" angle iron on nomad matting. This fed a 3 ft and 4 by 8 ft run with expanded metal over nomad matting. The plant processed 80 to 100 loose cubic yards (61 to 76 m^3) of gravel per hour. Water was supplied at 2000 igpm by a Pacific 8 by 6" pump. Stowe Creek was dammed and a complete recirculation system was created where water was settled down stream in three settling ponds before entering Montana Creek. A long tom and gold wheel were used in clean ups.

Surficial Geology and Stratigraphy The left limit Montana Creek bench consists of three units. Unit 1, 1.6 m (5.2 ft) thick, is a blue-green grey, moderately sorted cobble gravel, with subangular clasts, contains 10% boulders, 55% cobbles, and 35% pebbles. The upper 0.6 m (2 ft) consists of an imbricated, pebble gravel, absent of boulders, with isolated rip up pods of silty organics up to 10 cm (0.3 ft). Clasts are weakly imbricated in a north/northeast direction. Interbedded pebble gravel and medium grained sand comprise unit 2, from 1.6 to 2.2 m (5.2 to 7.2 ft). Weakly oxidized throughout and pervasively in patches, gravel and sand beds range from 10 to 30 cm thick and clasts are subangular to subrounded. Unit 3, 2.2 to 3.0 m (7.2 to 9.8 ft),

is a pebble gravel similar to unit 2, except lacking the presence of sand. Overlying the section is up to 3 m (10 ft) of black muck. Material sluiced from the Montana Creek bench cuts consists of 0.9 m (3 ft) of the lower gravel and up to 1.5 m (5 ft) of bedrock. Muck is 6.1 to 9.1 m (20 to 30 ft) thick on Stowe Creek, with 1.2 to 1.8 m (4 to 6 ft) of gravel and 0.6 to 1.2 m (2 to 4 ft) of bedrock sluiced.

Bedrock Geology Bedrock is quartzite and quartz-muscovite schist, and varies in degree of decomposition.

Sluicing on Stowe Creek in 2014 (Photo credit: Jim Leary).

Gold Characteristics Gold is fine grained, (12 mesh or finer), flat, flaky, bright, and includes up to 20% silver. The fineness ranges from 770 to 780.

Wounded Moose, a tributary of Indian

115O/10 2013: 63°37'20"N, 138°41'19"W

Abermeth, G., 2003, 2009-2014

Water License: PM09-653 (Active 2019)
Active Producer (2010-2014) **Operation no. 85**

Location Wounded Moose and Australia creeks, near the Indian River.

Work History and Mining Cuts Mr. Abermeth mined from 2010 to 2014 with a crew of up to three personnel. Work was conducted on the left limit throughout this period, including 20 to 30 exploratory drill holes.

Equipment and Water Treatment Equipment included a Caterpillar D9 bulldozer, a Hitachi 270 excavator, a Caterpillar 966 loader, and a feeder conveyor. The operation used a New Zealand type trommel with 3/8" primary screen and processed 60 loose cubic yards (46 m^3) of gravel per hour. Clean-ups were conducted using a sprigs-type jig and table.

2014 downstream view of cuts on Montana Creek and mouth of Stowe Creek on the left limit.

Surficial Geology and Stratigraphy The stratigraphic section is composed of 4.6 to 5.5 m (15 to 18 ft) of gravel overlain by 1.8 m (6 ft) of muck. Approximately 1.8 m (6 ft) of gravel was sluiced and yielded a grade of ½ ounce per hour.

Bedrock Geology Bedrock is orthogneiss (Bostock, 1942).

Gold Characteristics Gold recovered is flat, bright, flour gold, with no nuggets, and an average fineness of 845.

Unnamed left limit, a tributary of Indian

115O/10 2013: 63°36'03"N, 138°43'14"W

Carey, R. and L., 2013-2014

Water License: PM12-032 (Active 2022)

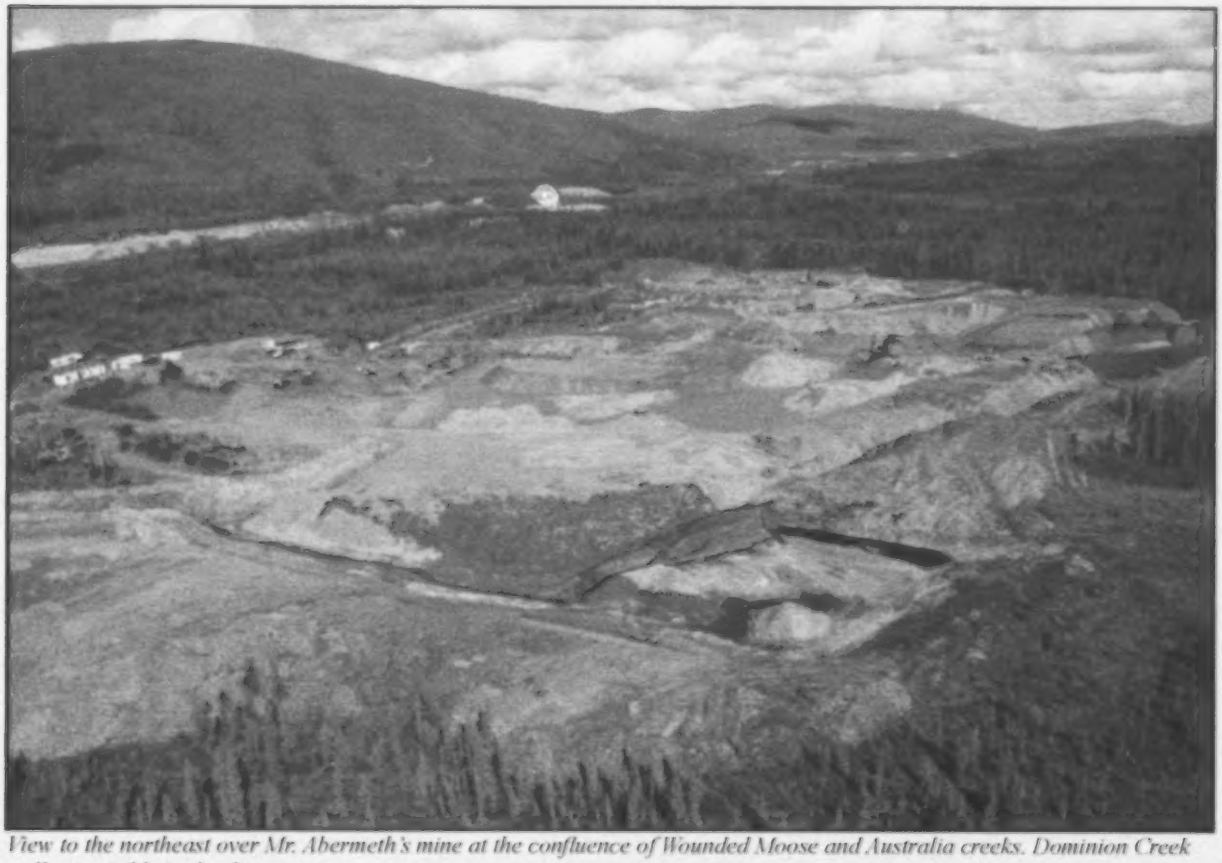
Active Producer (2013-2014) **Operation no. 86**

Location Unnamed left limit tributary of the Indian River, approximately 0.8 km downstream of Wounded Moose Creek.

Work History and Mining Cuts During their first season of mining in 2013, Randy and Lori Carey, along with one other miner and three camp personnel, worked a daily ten hour shift. Surface gravel was mined from one cut measuring 229 m (750 ft) long and a test pit measuring 0.9 m (3 ft) wide by 3.6 m (12 ft) long and 4.3 m (14 ft) deep. In 2014, mining continued at the same location.

Equipment and Water Treatment Heavy equipment present on site in 2013 included a Caterpillar D6 bulldozer with a ripper, and a Komatsu PC120-5 excavator with a 1 yd bucket. The wash plant consisted of a 1.8 by 1.8 m (6 by 6 ft) dump box and a 1.5 by 7.6 m (5 by 25 ft) long trommel feeding sluice runs that are 0.9 by 7.3 m (3 by 24 ft) long. A 5 by 4" pump allowed the plant to process 25 loose cubic yards (19 m^3) of gravel per hour while clean-ups were done using a long tom and table. Water was acquired from an out-of-stream intake pond and was settled out-of-stream in a pond measuring 30 by 20 m (33 by 22 ft) before being discharged.

Surficial Geology and Stratigraphy The mined section consisted of 4.3 m (14 ft) of loose gravel with interlayered muck. All of the gravel was processed and no bedrock was



View to the northeast over Mr. Abermeth's mine at the confluence of Wounded Moose and Australia creeks. Dominion Creek valley is visible in the distance.

encountered. This mine is located in a tributary valley where the Indian River dissects a prominent high-level bench containing Indian River gravel.

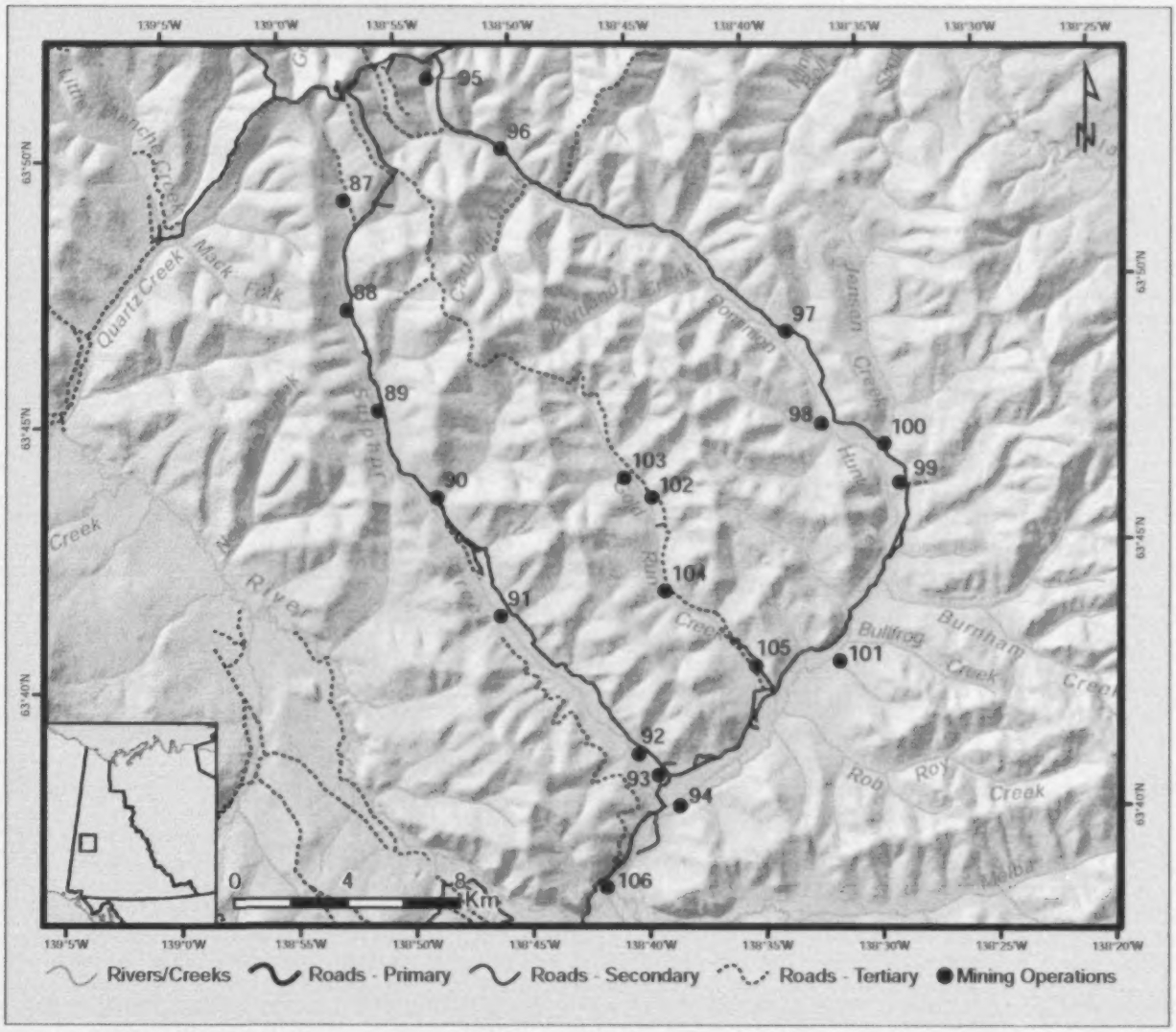
Bedrock Geology Bedrock is orthogneiss (Bostock, 1942).

Gold Characteristics Gold is bright and varies in size from large and flat to very fine.

The Carey's operation in 2014.

DOMINION-SULPHUR PLACER AREA

SITES 87-106



LEGEND

87 ..... Sprokkreeff, N.
88 ..... D.C. Klippert Explorations
89 ..... T.D. Oilfield Services Ltd.
90 ..... Lucky Lady Placers
91 ..... Kruger, H.
92 ..... Favron Enterprises Ltd.
93 ..... Tatra Ventures Ltd.
94 ..... Gatenby Enterprises Ltd.
95 ..... Mintz, M.
96 ..... Yanisaw, J.
97 ..... Sailor, A.
98 ..... O'Hearn, J.
99 ..... Hollis, A.
100 ..... Lucky Strike Ventures
101 ..... Dominion Gold Resources Ltd.
102 ..... Ruman, D.
103 ..... Mammoth Mining
104 ..... T.D. Oilfields Services
105 ..... Rical Mining Ltd.
106 ..... Tamarack Inc.

Sulphur, a tributary of Dominion

115O/15 2014: 63°49'51"N, 138°56'22"W

Sprokkreeff, N., 1977-2014

Water License: PM04-444 (Active 2015)

Active Producer (2010-2014) **Operation no. 87**

Location Sulphur Creek, upper,approximately 1 km upstream from mouth of Green Gulch.

Work History and Mining Cuts The Sprokkreeffs progressively mined upstream of the confluence of Green Gulch from 2010 to 2014. Monitoring occurred and side pay on both left and right limits was mined.

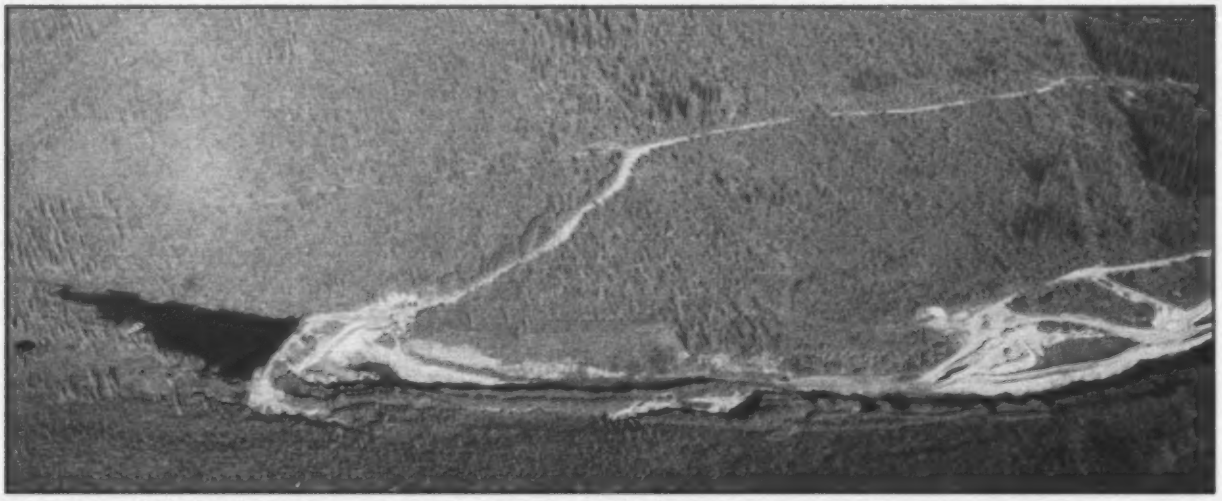
Equipment and Water Treatment Equipment in 2014 included a Caterpillar D8K bulldozer, American Model 35A excavator, and Pay Loader. The wash plant consisted of a custom fabricated high banker with a single main run able to process 60 to 100 loose cubic yards (46 to 76 m^3) per hour. Source water originated from a reservoir pond and supplied by a 10" Gorman-Rupp powered by a 3 cylinder Jimmy. Effluent was settled in a series of two ponds and discharged back into Sulphur Creek.

Surficial Geology and Stratigraphy The stratigraphic section on the left limit consists of interbedded fine-grained sand and granules from 0 to 0.40 m (0 to 1.3 ft) with significant organics and woody debris. From 0.40 to 0.50 m (1.3 to 1.6 ft) an undulating unit inversely grades from small granules to pebble sized clasts. Moderately oxidized, imbricated pebble-cobble, matrix-supported gravel is present from 0.50 to 1.25 m (1.6 to 4.1 ft) with isolated lenses of pervasively oxidized material, boulder sized clasts, and minor organics. An ice wedge cast measuring 1.05 m (3.45 ft) in length is exposed downstream of the measured section. Overlying the 1.25 m (4.1 ft) of gravelly sediment is 7.6 m (25 ft) of loess with abundant of organics. All gravel was sluiced as well as 0.9 to 1.2 m (3 to 4 ft) of bedrock.

Bedrock Geology Bedrock is quartzite and quartz muscovite schist.

Gold Characteristics Gold is fine with a fineness of 800.

Old timers shaft on Sulphur Creek at the Sprokkreeff's.



Aerial view of Mr. Sprokkreeff's operation on Sulphur Creek in 2013.

Sulphur, a tributary of Dominion

115O/15 2013: 63°47'48"N, 138°55'42"W

D.C. Klippert Explorations, 2007-2014

Water License: PM06-540 (Active 2017)

Active Producer (2010-2014) **Operation no. 88**

Location Sulphur Creek, upper, 0.5 km downstream from Meadow Gulch.

Work History and Mining Cuts Mr. Klippert actively mined Sulphur Creek from 2010 to 2014. In 2011, he monitored and mined the left limit of Sulphur Creek, below the mouth of Meadow Creek. Continuing on the left limit throughout 2012 and 2013, Mr. Klippert also conducted test drilling on a proposed right limit bench resistivity target in 2013. The drilling confirmed the absence of a right limit bench on this section of Sulphur Creek. In 2014, mining activity included two miners and a cook. Monitoring and mining continued on the left limit below Meadow Gulch.

Equipment and Water Treatment Equipment included a Deere 450 LC excavator, a Caterpillar bulldozer, and a Caterpillar loader. The wash plant was a skid-mounted New Zealand trommel.

Surficial Geology and Stratigraphy The 2011 cut consists of imbricated cobble-pebble Sulphur Creek gravel (pay) from 0 to 0.5 m (0 to 1.6 ft) with numerous angular to subangular quartz clasts. Overlying the pay from 0.5 to 3.5 m (1.6 to 11.5 ft) is stratified loess and fluvial sandy pebble beds. The fluvial beds contain angular fragments of weathered bedrock that are imbricated and show an upstream flow. In addition, the beds also dip upstream. This is unusual but probably reflects a local colluvial fan surface. The entire unit is frozen and contains ice wedges. Massive loess is present from 3.5 to 11.5 m (11.5 to 37.7 ft) with tephra present approximately 6 m (20 ft) below the surface. In 2014 the stratigraphy of pay gravel fluctuates between 1 to 2 m (3 to 6 ft) and the frozen muck overburden was 14.5 m (48 ft) thick.

Bedrock Geology Bedrock is quartzite and schist.

Gold Characteristics Gold is very fine.

Mr. Klippert's operation on the left limit of Sulphur Creek below Meadow Gulch in 2013.

Monitoring with an irrigation sprinkler at Mr. Klippert's Sulphur Creek operation in 2014.

Sulphur, a tributary of Dominion

115O/15 2013: 63°45'59"N, 138°53'55"W
115O/15 2013: 63°46'36"N, 138°54'01"W

T.D. Oilfield Services Ltd., 2012-2013

Water License: PM04-373-1 (Active 2015)
Active Producer (2012-2013) **Operation no. 89**

Location Sulphur Creek, right limit, 1 km downstream from Friday Gulch, and on the left limit at the confluence of Friday Gulch and Sulphur Creek.

Work History and Mining Cuts In 2011, Mr. Cross reassigned the water use license to T.D. Oilfield Services Ltd. They actively mined two cuts in 2012 and 2013, one on the right limit of Sulphur Creek and another at the mouth of Friday Gulch on the left limit of Sulphur Creek. In 2012, stripping occurred on the southeast side of Friday Gulch and continued throughout 2013. No activity occurred in 2014.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy The exposure on the right limit of Sulphur Creek is composed of slightly imbricated pebble-cobble gravel with isolated lenses of medium to coarse-grained sand from 0 to 1.15 m (0 to 3.8 ft). Clasts are subangular with an abundance of rounded, oxidized quartz cobbles. From 1.15 to 4.2 m (3.8 to 13.8 ft) stratified loess and fine to medium-grained sand is present. The uppermost unit is composed of organics from 4.2 to 4.8 m (13.8 to 15.7 ft). On the left limit cut at the mouth of Friday Gulch, the stratigraphic section is rusty orange-brown, crudely stratified gravel from 0 to 2 m (0 to 6.6 ft), with varied lenses of pervasive oxidation and undulating sand lenses, present mainly near the bedrock contact. Overlying the gravel unit is 2 to 5 m (6.6 to 16.4 ft) of loess.

Bedrock Geology Bedrock is schist and quartzite.

Gold Characteristics Not reported.

T.D. Oilfield Services' two active cuts at the confluence of Friday Gulch and Sulphur Creek in 2013.

Aerial view of Lucky Lady Placers' operation in 2013.

SULPHUR, A TRIBUTARY OF DOMINION

115O/10 2013: 63°44'27"N, 138°51'00"W

Lucky Lady Placers, 1981-2014

Water License: PM01-263 (Active 2014)

Active Producer (2010-2014) **Operation no. 90**

LOCATION Sulphur Creek and the mouth of Brimstone Gulch

WORK HISTORY AND MINING CUTS Four miners operated Lucky Lady Placers on Sulphur Creek and at the mouth of Brimstone Gulch from 2010 to 2014. In 2013, they mined two cuts, the first 60 by 60 m (200 by 200 ft) and the second 45 by 60 m (150 by 200 ft). They primarily mined the left limit of Sulphur Creek at the confluence of Brimstone Gulch and progressively up Brimstone Gulch for approximately 300 m (984 ft). Activity in 2014 consisted of stripping the left limit of Brimstone Gulch and no sluicing occurred.

EQUIPMENT AND WATER TREATMENT Equipment in 2013 included two Terex TA 40 tock trucks, a Caterpillar D9 bulldozer, John Deere 370 excavator, John Deere 450 excavator, and a Caterpillar 980C wheel loader. The wash plant consisted of a screen deck with an 8 by 16 ft feeder and was able to process 100 loose cubic yards (76 m^3) per hour. Water was supplied at 2000 igpm using an 8 by 10" Cornell pump powered by a GM engine. Water was treated out-of-stream in a pond that measured 914 by 457 m (3000 by 1500 ft). Clean ups were completed with a wheel, table jigs, and a long tom.

SURFICIAL GEOLOGY AND STRATIGRAPHY The exposure at the mouth of Brimstone Gulch consists of pebble-cobble gravel from 0 to 1.5 m (0 to 5 ft) with bedrock fragments up to 20 cm. Oxidation grades to pervasive in the upper part of the unit, at the contact with the overlying unit. A moderately oxidized, cobble-dominated gravel with primarily subrounded clasts is present from 1.5 to 3.6 m (5 to 12 ft). Fine to medium-grained sand with less than 10% clasts is present from 3.6 to 4.6 m (12 to 15 ft). Approximately 3.6 m (12 ft) of gravel was sluiced and up to 6.1 m (20 ft) of muck and organics was stripped.

BEDROCK GEOLOGY Bedrock is interbedded schist and phyllite.

GOLD CHARACTERISTICS Gold recovered is bright and varies in shape and size; it has a fineness of 810.

Sulphur, a tributary of Dominion

115O/10 2013: 63°42'21"N, 138°47'44"W

Kruger, H., 1975-2010

Water License: PM04-358 (Active 2014)

Active Producer (2010) **Operation no. 91**

Location Sulphur Creek, approximately 8.8 km upstream from its confluence with Dominion Creek

Work History and Mining Cuts The only work history recorded is from 2010 when Mr. Kruger mined the right limit of Sulphur Creek. Other activity in 2010 included a lease agreement with Coulee Resources who operated downstream of Mr. Kruger on the left limit.

Equipment and Water Treatment Equipment included a Caterpillar 225 excavator, Caterpillar D7 bulldozer, Caterpillar D9 bulldozer, Caterpillar 955K loader, two Hough 120C loaders, and a Koehring 605 dragline. Water was supplied at 1500 to 2000 igpm with an 8 by 8" Murphy pump powered by a 671 Detroit engine, allowing the wash plant to process 50 loose cubic yards (38 m^3) of gravel per hour.

Surficial Geology and Stratigraphy The right limit of Sulphur Creek consists of 5 to 6 m (16.4 to 19.7 ft) of gravel overlain by 5 m (16.4 ft) of frozen black muck. All gravel was sluiced as well as 0.1 to 0.3 m (0.5 to 1.0 ft) of bedrock.

Bedrock Geology Bedrock at this site is described as decomposed schist.

Gold Characteristics Gold is fine grained and bright yellow with a fineness of 790 to 820.

Sulphur, a tributary of Dominion

115O/10 2013: 63°40'02"N, 138°41'12"W

Favron Enterprises Ltd., 2010-2013

Water License: PM07-591 (Active 2018)

Active Producer (2010-2013) **Operation no. 92**

Location Sulphur Creek, 2.2 km upstream from its confluence with Dominion Creek.

Work History and Mining Cuts Stripping on lower Sulphur Creek occurred in the fall of 2010 and 2011. The 2012 season was spent mining both left and right limits. A total of 300 hours of sluicing occurred in 2013 and stripping on the right limit occurred. No activity occurred on the property in 2014.

Equipment and Water Treatment Equipment in 2012 included Hitachi EX750 excavator, John Deere 800 excavator, Hitatchi Zaxis 850 excavator, John Deere 330 excavator, Caterpillar D9 and D10 bulldozers, two Terex

Aerial view of Favron Enterprises operation on Sulphur creek in 2013.

8220 bulldozers, and three Komatsu HM400 rock trucks. The wash plant consisted of a 6 ft diameter by 40 ft long trommel with a 25 ft wash section and 15.75 ft screen. The eight 3 by 20 ft long sluice runs consisted of 12 ft of expanded metal and 8 ft of riffles, lined with a combination of unbacked and backed nomad matting.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is orthogneiss (Bostock, 1942).

Gold Characteristics Gold is fine.

Sulphur, a tributary of Dominion

115O/10 2014: 63°39'40"N, 138°40'16"W

Tatra Ventures Ltd., 2010-2013

Water License: PM11-017 (Active 2021)

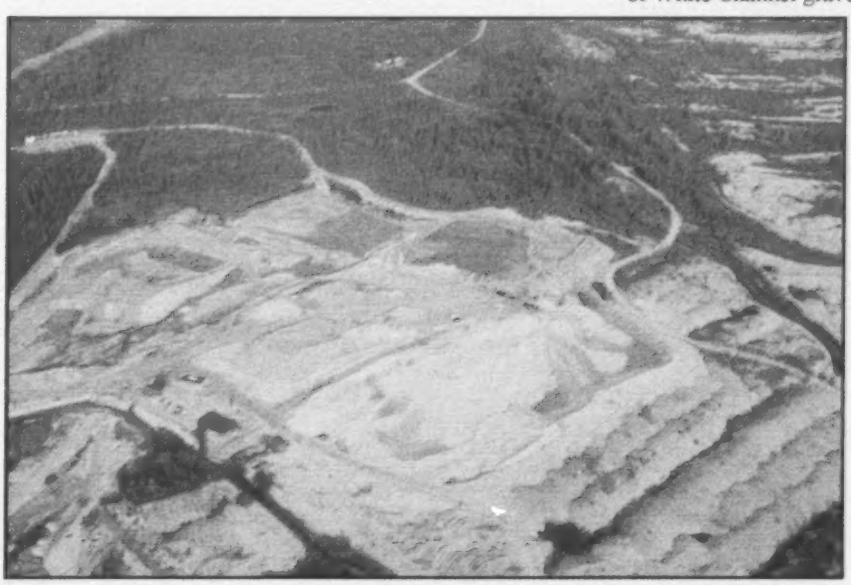
Active Producer (2010-2014) **Operation no. 93**

Location Sulphur Creek, at its confluence with Dominion Creek.

Work History and Mining Cuts In late October 2010, three miners conducted a stripping program on Sulphur Creek, at its confluence with Dominion Creek. They ripped 1.8 m (6 ft) of frozen ground and stripped an area approximately 122 by 76 m (400 by 250 ft). Mining in 2011 occurred on the ground that was stripped from the previous year and a 7525 m² (9000 yd²) was area sluiced. Various cuts were mined at the mouth of Sulphur Creek in 2012 and 10033 m2 (12,000 yd²) of area was sluiced. In 2013, five miners operated two shifts, twenty-four hours a day and continued activity in the same location as 2012. They mined material as it thawed and sluiced an area totaling 15050 m² (18,000 yd²).

Equipment and Water Treatment Equipment in 2013 included a Caterpillar D10N bulldozer, Caterpillar 235C excavator, John Deere 270C LC excavator, Volvo L220E loader, DJB D25B articulated rock truck, DJB D330B articulated rock truck, and a DJB D350 articulated rock truck. In 2011, the wash plant consisted of a 5 by 12 ft hall screen deck with 1/2" punch plate, 12 ft wide runs with expanded metal, boil boxes and hydraulic riffles, and a 2 by 40 ft stacker. In 2012, the wash plant was a 6 by 38 ft trommel with 1/2" punch plate, 16 ft wide runs with boil boxes and expanded metal which processed 120 loose cubic yards (92 m³) per hour. The feed rate to the trommel was increased in 2013 with the addition of a 42 ft feeder with 36 ft delivery and a 16 yard hopper with grizzly, increasing the processing rate to 150 loose cubic yards (115 m³) of gravel per hour. Effluent was treated out-of-stream and 30% was recycled using a 61 by 122 m (200 by 400 ft) pond. For clean ups, concentrates were screened to minus 3/8", then through live bottom sluices and a long-tom.

Surficial Geology and Stratigraphy The 2011 and 2012 mining cuts were 11.6 to 12.2 m (38 to 40 ft) in height with 3.3 to 4.9 m (11 to 16 ft) of frozen muck overlying 1.2 to 2.4 m (4 to8 ft) fine gravel and 4.9 to 7.6 m (16 to 25 ft) White Channel gravel. In 2011, 1.5 to 1.8 m (5 to 6 ft) of White Channel gravel and 0.3 to 0.5 m (1 to 1.5 ft) of bedrock were sluiced. In 2013, the exposure consisted of massive, imbricated clast-supported gravel with subrounded to rounded cobble and boulder sized clasts (predominantly quartz) from 0 to 3.8 m (0 to 12.5 ft), overlain by crudely stratified moderately oxidized pebble-cobble gravel from 3.8 to 7.0 m (12.5 to 23.0 ft), and overlain muck from 7.0 to 8.5 m (23.0 to 27.9 ft).



Aerial view of Tatra Ventures Ltd. operation in 2013 near the mouth of Sulphur Creek.

Bedrock Geology Bedrock is decomposed green chlorite schist.

Gold Characteristics Gold is fine-grained, with a fineness of 840.

Sulphur, a tributary of Dominion

115O/10 2013: 63°39'09"N, 138°39'14"W

Gatenby Enterprises Ltd., 1998-2014
Water License: PM04-407 (Active 2015)
Active Producer (2010-2014) **Operation no. 94**

Location Confluence of Dominion and Sulphur creeks.

Work History and Mining Cuts Minimal work history is recorded under PM04-407, aside from actively mining from 2010 to 2014.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is orthogneiss (Bostock, 1942).

Gold Characteristics Not reported.

Lombard Pup, a tributary of Dominion

115O/15 2013: 63°52'18"N, 138°53'19"W

Mintz, M., 2013-2014
Water License: PM09-663-1 (Active 2015)
Active Producer (2013-2014) **Operation no. 95**

Location Lombard Pup, headwaters, right fork.

Work History and Mining Cuts 2013 was the first year Mr. Mintz was actively stripping and sluicing.

Equipment and Water Treatment Equipment documented in 2013 included a small excavator and a trommel.

Mr. Mintz's wash plant on Lombard Creek in 2013 (Photo credit: Lee Mierau).

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, quartz muscovite-calcite schist, gneiss, and amphibolite (Mortensen, 1996).

Gold Characteristics Not reported.

Dominion, a tributary of Indian

115O/15 2013: 63°51'06"N, 138°49'48"W

Yanisiw, J., 2005, 2008-2012
Water License: PM03-349 (Active 2014)
Active Producer (2010-2012) **Operation no. 96**

Location Dominion Creek, between Remington Pup and Mummie Pup.

Work History and Mining Cuts Mr. Yanisiw's operation was focused on the left limit, with stripping reported in 2010. No work history is recorded for the 2011 and 2012 seasons, aside from Mr. Yanisiw being present on site.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, quartz muscovite-calcite schist, gneiss, and amphibolite (Mortensen, 1996).

Gold Characteristics Not reported.

Dominion, a tributary of Indian

115O/15 2013: 63°48'16"N, 138°36'42"W

Sailer, A., 1990-2014
Water License: PM04-421 (Active 2015)
Water License: PM03-335 (Active 2014)
Active Producer (2010-2014) **Operation no. 97**

Location Dominion Creek, upper, between Chapman Pup and Hunter Creek.

Work History and Mining Cuts In 2014, the Sailer's operation consisted of eight personnel working a 10 hour shift daily. Development work consisted of stripping and some mining approximately 2.4 km above camp and near Lombard Pup. Sluicing also occurred in 2013 with a 100% water recycling system.

Equipment and Water Treatment For mining seasons 2010-2014, equipment included four Caterpillar bulldozers (two D9H and two D9G), four Caterpillar excavators (225, 235B, and two 235C), four Caterpillar Loaders (980C and three 980B), and an International Harvester 350 Payhauler. The wash plant consisted of an electric driven 30 ft conveyor feeding a 6 ft diameter, 12 ft long trommel, a 5 by 14 ft El Russ double screen deck, and a 10 by 20 ft Derocker. Four 2.5 by 10 ft sluice runs were lined with Coco matting, Nomad matting, and 1½" angle iron riffles. Water for sluicing was supplied by a Caterpillar 10" Dayton Dowd for washing 100 loose cubic yards of gravel per hour. Pumps used for dewatering included a Caterpillar 12" Byron Jackson, a Deutz 8" Marlow, and a John Deere 6" Gorman Rupp. Water was acquired from Dominion Creek and discharged out-of-stream into a 200 by 200 ft (61 by 61 m) settling pond. Final clean-ups were done daily using a jig.

Surficial Geology and Stratigraphy The average stratigraphic section from 2010 to 2014 is 3 to 15 m (10 to 50 ft) thick. Muck/silt overburden varies from 1.5 to 14 m (5 to 45 ft) in thickness, and gravel varies in thickness from 1.5 to 3 m (5 to 10 ft). All of the gravel was sluiced along with several feet of bedrock.

Bedrock Geology Bedrock is mapped as Permian quartzite and quartz-mica schist.

Gold Characteristics Gold recovered in 2010 to 2014 mining seasons was described as fine, flat, and flakey with a fineness of 820.

Wash plant at Mr. Sailer's operation in 2013 (Photo credit: Lee Mierau).

Dominion, a tributary of Indian

115O/15 2013: 63°46'35"N, 138°34'45"W

O'Hearn, J., 2013-2014

Water License: PM05-460 (Active 2015)
Water License: PM11-050 (Active 2015)
Active Producer (2013-2014) **Operation no. 98**

Location Dominion Creek, 0.5 km upstream from the confluence with Hunter Creek.

Work History and Mining Cuts Water license and MLU approval was transferred from the late Mr. Conklin to Mr. O'Hearn in 2012. Two cuts were mined by Mr. O'Hearn in 2013: one large cut on the right limit of Dominion Creek, and another smaller cut to the south. Reclamation was the only activity to occur in 2014.

Active cut in 2013 at the O'Hearn operation on Dominion Creek.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy The main cut upstream from Hunter Creek consists of crudely stratified, cobble-gravel from 0 to 4 m (0 to 13 ft). Within this unit, an undulating, pervasively oxidized unit of granules and medium grained sand ranging in thickness from 10 to 30 cm is present approximately 0.75 m (2.5 ft) from the bottom of the section. Gravel is overlain by muck from 4 to 10 m (13 to 32 ft).

Bedrock Geology Bedrock is interbedded quartzite and schist.

Gold Characteristics Gold is fine grained with a fineness of 823.

Dominion, a tributary of Indian

115O/15 2014: 63°45'38"N, 138°31'09"W

Hollis, A., 2002-2014

Water License: PM07-562 (Closed 2013)
Water License: PM13-010 (Active 2023)
Active Producer (2010-2014) **Operation no. 99**

Location Dominion Creek, left limit, mouth of Kentucky Creek.

Work History and Mining Cuts Only general site maintenance occurred in 2010 and 2011. Three miners and one camp personnel were employed at the operation, working eleven hour shifts daily in 2012 and 2013; one large cut 457 by 46 m (1500 by 150 ft) was mined during both seasons. In 2014, three miners sluiced a continuation of 2013s cut and stripped a 1.6 km (1 mi) left limit cut upstream of Kentucky Creek.

Equipment and Water Treatment In 2014, equipment on site included a John Deere 370 excavator, John Deere 450 excavator, Komatsu PC400LC excavator, and two conveyors - 110 and 130 ft long - mounted on Hitachi EX450LCH excavator bodies, which were custom designed and built by Mr. Hollis. The wash plant consisted of a 5 by 11 ft oscillating screen deck with 7/16" screen, able to process 80 loose cubic yards (61 m^3) per hour. Water was acquired from Kentucky Creek with a 5 by 5" Cornell pump powered by a Caterpillar 3208 at 1100 gpm. Effluent was settled out-of-stream and through old dredge tailings. Clean ups were conducted using a wheel.

Surficial Geology and Stratigraphy In 2013 and 2014, three units were documented on the left limit of Dominion Creek upstream from Kentucky Creek. Unit 1, from 0 to 0.3 m (0 to 1 ft) consists of stratified medium to coarse-grained sand and quartz-rich pebble-cobble gravel with bedrock fragments and variable oxidation throughout. Lenses of buried muck with woody debris are present in the upper portion of this unit. Unit 2, from 0.3 to 2.8 m (1 to 9.2 ft) is dominantly coarse grained sand and granules and contains minor, undulating lenses of pebble-cobble gravel with subangular clasts. Stratified coarse-grained sand, loess with organic inclusions, and thin bands of pebbly sand is present in the upper 1.5 m (4.9 ft) of the unit. Unit 3 consists of organic rich loess from 2.8 to 4.1 m (9.2 to 13.5 ft) with a wavy bottom contact. On average, in 2013 and 2014, 0.6 to 0.9 m (2 to 3 ft) of unit 1 gravel and 0.6 m (2 ft) of bedrock was sluiced, with up to 9 m (30 ft) of muck stripped prior to mining.

A view of the left limit overburden geology on Dominion Creek. Mr. Hollis is standing on the paleo-Dominion Creek pay gravel.

Mr. Hollis' operation on Dominion Creek in 2013, showing his custom built track mounted conveyor.

Bedrock Geology Bedrock is a highly fractured and decomposed schist with all bedrock below Kentucky Creek becoming decomposed.

Gold Characteristics Gold varies from fine to coarse and above Kentucky Creek the fineness is 850.

Dominion, a tributary of Indian

115O/10 2013: 63°46'19"N, 138°31'59"W

Lucky Strike Ventures, 2011-2013

Water License: PM07-567-1 (Active 2013)

Active Producer (2011-2013) **Operation no. 100**

Location Dominion Creek, at the mouth of Jensen Creek.

Work History and Mining Cuts In 2010, Mr. Ruman held the license and a cut was located parallel to the Dominion Creek road. Lucky Strike Ventures became the licensee in 2011 and held it until the end of 2013. Recorded activity is limited from 2011 to 2013, but included stripping and marshalling equipment at camp. By the end of 2013, the operator had moved to a different location on Bonanza Creek.

Equipment and Water Treatment Equipment in 2013 included a Caterpillar 345B excavator, Kawasaki 95Z wheel loader, and a Caterpillar D8 and D10. The wash plant consisted of a 1¼" screen deck and processed 70 loose cubic yards (53 m^3) an hour.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is muscovite and chlorite schist.

Gold Characteristics Gold is very fine with a fineness of 810.

Dominion, a tributary of Indian

115O/10 2014: 63°42'10"N, 138°32'58"W

Dominion Gold Resources Ltd., 2013-2014

Water License: PM12-054-2 (Active 2023)

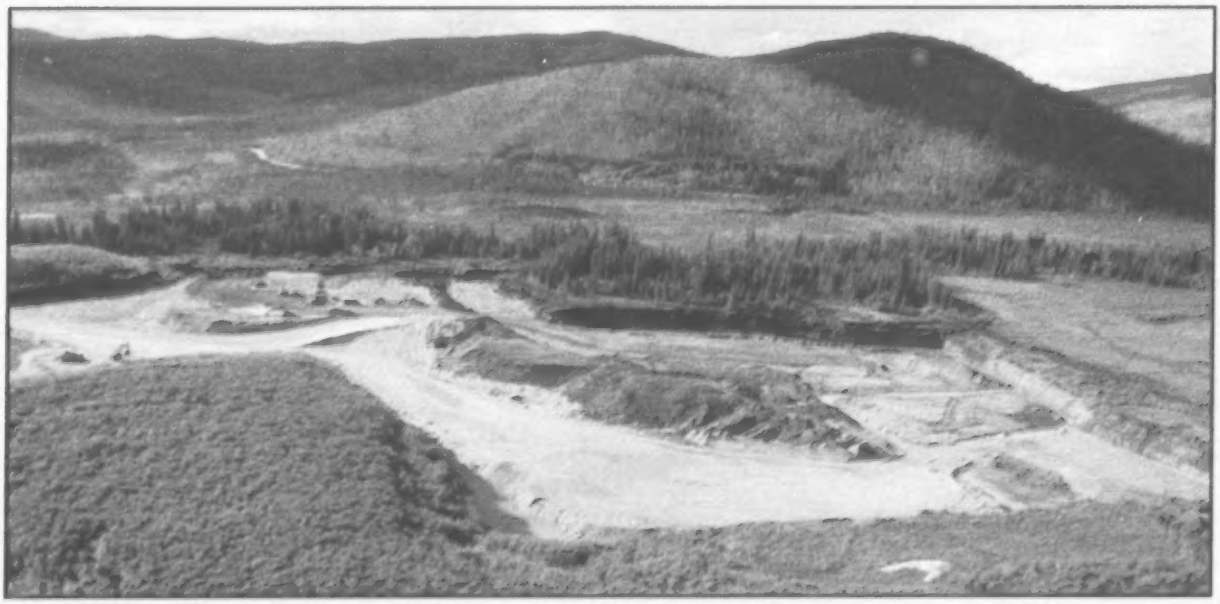
Active Producer (2013-2014) **Operation no. 101**

Location Dominion Creek, left limit at the mouth of Eagle Creek.

Work History and Mining Cuts Activity in 2013 consisted of exploration drilling. In 2014, 16 personnel operated a daily shift and mined an area covering 27870 m^2 (300,000 ft^2).

Equipment and Water Treatment Equipment utilized in 2014 included a Caterpillar 245 excavator, Hitachi 450 excavator, John Deere 350 excavator, three Volvo A40D rock trucks, three Caterpillar wheel loaders - 980, 988 and 992, and four Caterpillar bulldozers - D11, D10, D9, and D8. Water was supplied by a 10" pump to the two screen deck wash plant, which enabled it to process 200 loose cubic yards (153 m^3) of gravel per hour. Clean-ups were conducted using an RP-4 gold recovery shaker table.

Surficial Geology and Stratigraphy The stratigraphy exposed in the 2014 cut consisted of three units. Unit 1, from 0 to 3.3 m (11 ft) at the base of the section, is the Ross gravel as described by Froese *et al.* (2001). According to this previous research, the Ross gravel is >780000 years old, and in the 2014 cut is characterized as a quartz-rich pebble-cobble gravel containing rare boulders up to 100 to 150 cm in diameter. The bottom 1.2 m (4 ft) of the Ross gravel and



Dominion Gold Resources operation on Dominion Creek at the mouth of Eagle Creek.

Alluvial gravel units exposed at Dominion Gold Resources' operation on Dominion Creek in 2014.

0.3 m (1 ft) of decomposed green (chlorite) schist bedrock is considered pay. Unit 2, from 3.3 to 5.8 m (11 to 19 ft), consists of the Dominion Creek gravel, which is an oxidized (brown) quartz-rich gravel that fines upward from a pebble-cobble gravel to a sandy pebble gravel. Organic material in the Dominion Creek gravel contains a variety of radiocarbon ages from >46 000 years old to 6000 years old (Froese *et al.*, 2001). Unit 3, from 5.8 to 10.7 m (19 to 35 ft), is transported loess (silt) containing reworked organic material.

Bedrock Geology Bedrock is decomposed chlorite-schist.

Gold Characteristics Gold is all fine and varies in fineness from 845 to 851.

Dominion, a tributary of Indian

115O/10 2008: 63°44'53"N, 138°41'46"W

Ruman, D., 2005-2009, 2011

Water License: PM10-020 (Active 2020)
Active Producer (2011) **Operation no. 102**

Location Upper Gold Run Creek, approximately 1.2 km downstream from 71 Pup.

Work History and Mining Cuts Activity in 2010, 2012, and 2013 is unknown. Sluicing and stripping occurred in 2011.

Equipment and Water Treatment Two excavators, a fuel truck, a tracked machine, and a drill were present on site in 2013.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite, quartz-muscovite-calcite schist, gneiss, and amphibolite (Bostock, 1942).

Gold Characteristics Not reported.

Gold Run, a tributary of Dominion

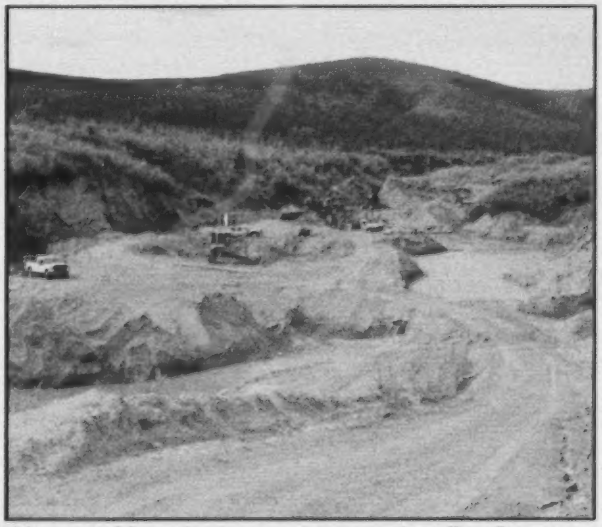
115O/15 2014: 63°45'11"N, 138°43'01"W

Mammoth Mining, 2012-2014

Water License: PM09-664-1 (Active 2020)
Water License: PM10-073 (Active 2021)
Water License: PM10-074 (Active 2021)
Water License: PM12-018 (Active 2022)
Active Producer (2012-2014) **Operation no. 103**

Location Gold Run Creek, 200 m downstream from the mouth of 71 Pup.

Work History and Mining Cuts Mammoth Mining's first year of operation was in 2012 and they conducted a testing program up 66 Pup, which included test pitting. In 2013 mining occurred at the mouth of 66 Pup and the right limit of Gold Run Creek chasing side pay. A crew of five progressively mined and stripped upstream along Gold Run Creek, downstream of 71 Pup throughout 2014. A cut 46 by 122 m (150 by 400 ft) was also stripped on the left limit, at the mouth of 66 Pup.



Mammoth Mining's operation on upper Gold Run Creek in 2014, looking upstream towards 71 Pup.

Equipment and Water Treatment Equipment in 2014 included a Samsung 330 excavator, Hitachi 200 excavator, Caterpillar D5, D8H and D9H bulldozers, and Caterpillar D250E rock truck. The wash plant was a vibrating screen deck that processed up to 40 loose cubic yards (30 m^3) of gravel per hour. Two hydraulic boil boxes, one normal boil box, and a 4 ft wide by 6 ft long upper sluice run with angle iron fed into a lower sluice run 17 ft wide by 10 ft long with expanded metal. Water was 100% recycled. Clean ups were conducted using a jig and custom fabricated table.

Surficial Geology and Stratigraphy In 2014, the bottom 1.2 m (4 ft) of gravel, considered the pay unit, consists of cobble-pebble gravel that is clast supported, moderately to pervasively oxidized, with 30% fine grained sandy matrix and contains an abundance of quartz clasts. All gravel and 0.6 to 1.2 m (2 to 4 ft) of bedrock was sluiced. In 2014, downstream from the mouth of 71 Pup, gravel is 3 m (10 ft) thick with the bottom 1.2 m (4 ft) yielding the best grades.

Bedrock Geology Bedrock varies from decomposed to fractured chlorite-muscovite-schist.

Gold Characteristics Gold varies from coarse to fine but primarily fine with the largest nugget recovered being 3/4 oz. Fineness ranges from 840 to 870.

Gold Run, a tributary of Dominion

115O/10 2014: 63°43'09"N, 138°40'48"W
115O/10 2014: 63°42'48"N, 138°38'30"W

T.D. Oilfields Services Ltd., 2010-2014

Water License: PM08-599 (Active 2018)
Active Producer (2010-2014) **Operation no. 104**

Location Gold Run Creek, at the confluence with Whitman Gulch and 0.5 km downstream from Laskey Creek.

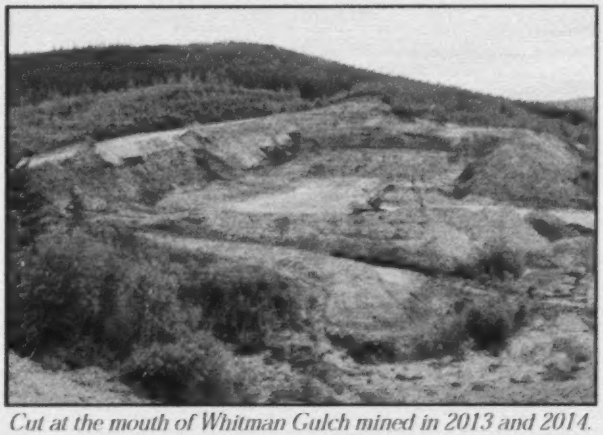
Work History and Mining Cuts TD Oilfields Services Ltd. conducted mining on Gold Run Creek, Laskey Lake, and Laskey Creek in 2010; eight miners and three camp personnel worked daily twelve hour shifts. They mined three cuts on Gold Run Creek: the first measured 61 by 46 m (200 by 150 ft), and the other two were approximately 46 by 30 m (150 by 100 ft). Two cuts, 30 by 76 m (100 by 250 ft) each, were mined on Whitman Gulch and mid Gold Run Creek in 2011, with a crew of seven miners and three camp personnel working two daily twelve hour shifts. Three cuts on lower Gold Run Creek were mined in 2012, measuring 15 by 91 m (50 by 300 ft), 15 by 61 m (50 by 200 ft) and 11 by 213 m (35 by 700 ft). During the 2013 season, lower Gold Run Creek, Whitman Gulch, and below Laskey Lake were mined by eight miners and two camp personnel working daily twelve hour shifts. Three cuts were mined during the 2013 season, measuring 91 by 183 m (300 by 600 ft), 305 by 12 m (1000 by 40 ft) and 91 by 61 m (300 by 200 ft).

T.D. Oilfield Services Ltd. 2014 cut below Laskey Lake, looking downstream.

In 2014, two cuts below Laskey Lake, on the right limit of Gold Run Creek, and a third cut on the left limit were mined. The cut at the mouth of Whitman Gulch measured 58 by 154 by 14 m (190 by 505 by 46 ft), with the upper cut downstream of Laskey Creek 36 by 81 by 9 m (118 by 265 by 29 ft). Up to 13 miners and one camp personnel were active throughout 2014.

Equipment and Water Treatment Equipment on site from 2010 to 2014 included a Caterpillar D8L bulldozer, Caterpillar 345 excavator, Bobcat 335 excavator, Volvo 220 E wheel loader, and up to two 30-tonne Volvo rock trucks. A Caterpillar D10N with a ripper was added in 2013. The wash plant consisted of a screen deck with a 3/4" punch plate, and processed up to 120 cubic yards (92 m^3) of gravel per hour. Water was provided by a 14" Cornell pump powered by a Caterpillar 3608 engine. Water was 100% recycled in 2010 and 2011; a previous cut (locally known as Laskey Lake) was used as a settling pond in 2010 and a 183 by 18 m (600 by 60 ft) settling pond was used in 2011. Effluent treatment occurred out-of-stream in 2012 and 2013 but the water was not recycled; the 2012 pond was 30 by 91 m (100 by 300 ft) in size, while the 2013 pond measured 183 by 18 m (600 by 60 ft). A jig shot, wheel and table were used in the clean-ups.

Surficial Geology and Stratigraphy The depth of the 2010 cut varied from 3.0 to 7.6 m (10 to 25 ft) with 1.5 m (5 ft) of pay gravel and 0.6 to 0.9 m (2 to 3 ft) of bedrock sluiced. In 2011, the section consisted of 4.6 to 6.1 m (15 to 20 ft) of both coarse and fine dredge tailings, overlain by dredge muck up to 9 m (30 ft) thick. In 2012, the section on lower Gold Run Creek was 12 to 18 m (40 to 60 ft) deep, and frozen below 4.6 m (15 ft), with up to 10.7 m (35 ft) of the material sluiced. In 2013, mining cuts ranged from 4.6 to 12.2 m (15 to 40 ft) deep, with 0.9 to 2.4 m (3 to 8 ft) of pay gravel and 0.6 to 1.2 m (2 to 4 ft) of bedrock sluiced.



Cut at the mouth of Whitman Gulch mined in 2013 and 2014.

The ground, at the mouth of Whitman Gulch, consists of 0.2 m (0.6 ft) of clast supported, pebble gravel with subangular clasts, an abundance of quartz, and a sandy-granule matrix. Coarse sand and granules with 3% clasts is present from 0.2 to 0.6 m (0.6 to 2.0 ft) overlain by 0.6 to 0.7 m (2.0 to 2.3 ft) of pebble gravel. From 0.7 to 14.2 m (2.3 to 46.6 ft) reworked loess and organics with woody debris is present.

Bedrock Geology Bedrock is quartzite and muscovite-schist.

Gold Characteristics Gold is fine at Laskey Lake and coarse below Laskey Lake. It is generally chunky and smooth with a few nuggets around Whitman Gulch and mid Gold Run Creek. Gold is very fine and bright in lower Gold Run Creek. Gold recovered from 2010 and 2014 has a fineness of 850.

Gold Run, a tributary of Dominion

115O/10 2014: 63°41'54"N, 138°36'32"W

Rical Mining Ltd., 2012-2014

Water License: PM11-028 (Active 2021)
Active Producer (2012-2014) **Operation no. 105**

Location Gold Run Creek, approximately 1.8 km upstream from its confluence with Dominion Creek.

Work History and Mining Cuts Rical Mining Ltd. stripped ground in fall of 2012 on the left limit of Gold Run Creek. In 2013, a cut 30.5 by 91.4 m (100 by 300 ft) was mined. A crew of three miners operated a daily shift throughout 2014 and continued to mine the left limit, progressively stripping and mining side pay upstream from the previous year.

Rical Mining Ltd. moving overburden with their custom fabricated track-mounted conveyor on lower Gold Run Creek in 2014.

Equipment and Water Treatment Equipment in 2014 included a Hitachi 450 excavator, Hitachi 225 excavator, 40 ton rock truck, and a 120 ft track-mounted conveyor. A New Zealand 5 ft diameter by 28 ft long trommel with a 1/2" screen was used in 2013 and processed 50 loose cubic yards (38 m^3) per hour. Water was supplied by a 6" pioneer pump powered by a Deutz engine and 100% recycled in a settling pond that measured 182.9 by 45.7 m (600 by 150 ft).

Surficial Geology and Stratigraphy The left limit of Gold Run Creek consists of 1.5 to 2.4 m (5 to 8 ft) of cobble-pebble gravel with an abundance of quartz and schist overlain by up to 11.6 m (38 ft) of loess. The bottom 0.6 m (2 ft) of gravel and up to 0.3 m (1 ft) of bedrock was sluiced.

Bedrock Geology Bedrock is chlorite-muscovite-schist varying between decomposed to highly fractured.

Gold Characteristics Gold is very flat and fine with an approximate fineness of 850.

Dominion, a tributary of Indian

115O/10 2014: 63°37'29"N, 138°42'01"W

Tamarack Inc., 2013-2014

Water License: PM08-618 (Active 2019)
Water License: PM10-031 (Active 2023)
Active Producer (2013-2014) **Operation no. 106**

Location Dominion Creek, between Scribner Creek on the right limit and Australia Creek on the left limit.

Work History and Mining Cuts Mr. Schnabel, under agreement from Tamarack Inc. first operated on Dominion Creek in 2013. Three large right limit cuts were mined, in addition to a large cut on the left limit, immediately downstream from the mouth of Australia Creek. In 2014, three cuts were mined; a right limit cut, (500 by 1400 ft) approximately 1.5 km downstream from the mouth of Scribner Creek on the Indian River; a cut on right limit of Dominion Creek 0.4 km upstream from the mouth of Scribner Creek; and a left limit cut located in the middle of the Dominion Creek valley at the mouth of Australia Creek.

Equipment and Water Treatment Equipment present on site in 2014 included two Volvo A35D articulated rock trucks, two Volvo 460 excavators, one Volvo 700 excavator, four Volvo 220F wheel loaders, and two Caterpillar D10 bulldozer. The wash plant consisted of a 6 by 10 ft hydraulic hopper with grizzly feeding a vibrating screen deck, with 2" upper and 1/2" lower screen. One conveyor was used to feed the screen deck and another was used to displace tailings. A total of four upper sluice runs, 8 ft wide by 30 ft long flared out and split into five runs, 16 ft wide by 6 ft long, with a combination of hydraulic riffles, Hungarian riffles and expanded metal. Processing rate of the plant varied from 70 to 125 loose cubic yards (53 to 95 m^3) per hour, depending upon material. Water was acquired from previous cuts and effluent was settled in a series of four ponds. A jig and table were used for clean ups.

Surficial Geology and Stratigraphy The stratigraphy of the 2013 right limit cut downstream from the mouth of Scribner Creek consists of two units. Unit 1, from 0 to 2.4 m (8 ft), is a massive to crudely bedded gravel containing moderate oxidation and sand lenses in the lower half of the unit. Unit 1 is on bedrock, however, the best pay and the layer that was sluiced is located between 0.6 to 1.2 m (2 to 4 ft) above the oxidized gravel. Unit 2, from 2.4 to 3.6 m (8 to 12 ft), is loess overburden. In 2014 the main cut was located above the mouth of Scribner Creek on the right limit of Dominion Creek. The stratigraphy consists of three units. Unit 1 from 0 to 1.8 m (6 ft) is a compact grey pebble-cobble gravel with organic-rich mud. The fine component in the gravel is silty, which makes the gravel relatively compact. The lower 0.6 m (2 ft) of unit 1 and 1 m (3 ft) of bedrock is sluiced. Unit 2 from 1.8 to 3.6 m (6 to 12 ft) is an oxidized sandy gravel that has a general fining upward structure from a pebble-cobble gravel to a dominantly sandy unit at the

Mr. Schnabel's wash plant on Dominion Creek in 2014.

upper contact. The gravel is less compact than the underlying silt gravel and it contains large wood fragments. Unit 3 from 3.6 to 6.1 m (12 to 20 ft) overlies the gravel units and consists of a deposit of fluvial mud.

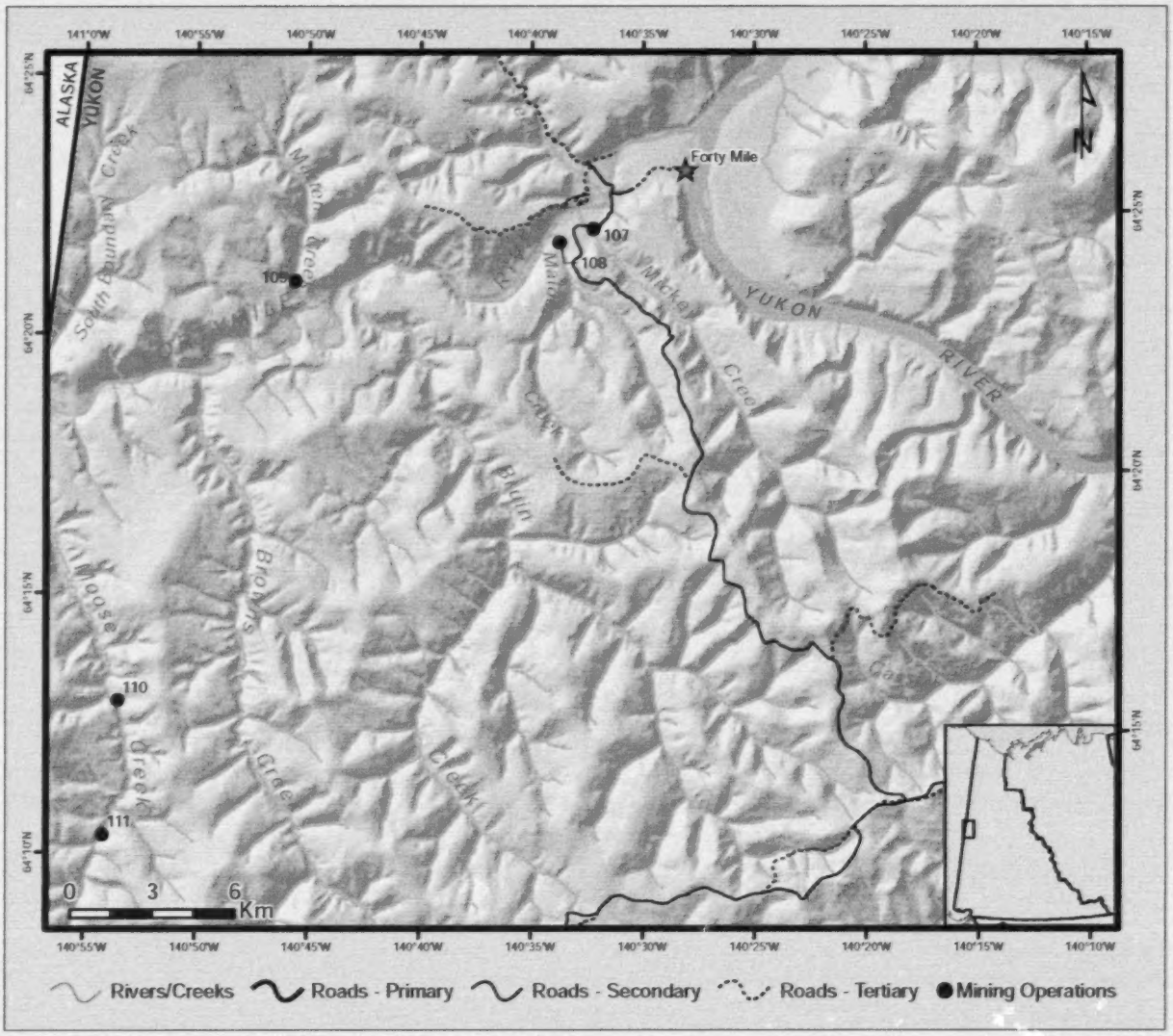
Bedrock Geology Bedrock is chlorite-schist that varies from decomposed to competent.

Gold Characteristics Gold is mostly 30 to 35 mesh with 1 to 2% nuggets. Gold recovered from Dominion Creek valley is coarser than the limits.

2014 cut near the right limit of Dominion Creek, upstream from the mouth of Scribner Creek. The lower-most muddy gravel is considered pay.

FORTYMILE
PLACER AREA

SITES 107 - 111



LEGEND

107 ..... 41497 Yukon Inc.
108 ..... Groundhog Exploration Co. Ltd.
109 ..... Fortymile Placers
110 ..... Foy, K.
111 ..... Young, R.

Mickey, a tributary of Fortymile

116C/07 2013: 64°23'23"N, 140°36'12"W
116C/07 2013: 64°24'56"N, 140°34'41"W

41497 Yukon Inc., 2009, 2012-2013

Water License: PM08-603 (Active 2018)
Water License: PM10-077 (Active 2021)
Active Producer (2012-2013) **Operation no. 107**

Location Two locations: Mickey Creek, a right limit tributary, 5.8 km upstream from the mouth of Fortymile River; and Fortymile River, right limit, 2.4 km upstream from the mouth of Fortymile River.

Work History and Mining Cuts No information is available for the status of the operation under PM08-603 on Mickey Creek from 2010 and 2011. In 2012 testing occurred on the right limit, 800 m (2,625 ft) upstream from the confluence with Fortymile River. Testing continued in the same location throughout the 2013 season. Work history on right limit of Fortymile River, PM10-077 is unknown.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite and quartz-muscovite-chlorite-schist (Mortensen, unpub.).

Gold Characteristics Not reported.

Maiden, a tributary of Fortymile

116C/07 2013: 64°23'02"N, 140°37'38"W

Groundhog Exploration Co. Ltd., 2003-2007, 2013-2014

Water License: PM07-592 (Active 2013)
Water License: PM12-067 (Active 2018)
Active Producer (2013-2014) **Operation no. 108**

Location Maiden Creek.

Work History and Mining Cuts Minimal information was reported for PM07-592, with information only available from 2013. Status of the operation from 2010 to 2012 is unknown. In 2013, Mr. Woodsend stripped an area 91 by 61 m (300 by 200 ft). No sluicing occurred but drilling was planned for later in the season. Drilling and testing occurred throughout 2014.

Equipment and Water Treatment Water was 100% recycled.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite and quartz-muscovite-chlorite schist (Mortensen, unpub.).

Gold Characteristics Not reported.

Fortymile, a tributary of Yukon

116C/7 2014: 64°21'38"N, 140°49'17"W

Fortymile Placers, 1987-2014

Water License: PM05-462 (Active 2015)
Water License: PM07-579 (Active 2018)
Active Producer (2010-2014) **Operation no. 109**

Location Fortymile River and Marten Creek.

Work History and Mining Cuts From 2010 to 2013 the operation varied between two to five miners working two shifts up to twenty four hours a day. Throughout the seasons four continuous cuts of river bars and creek gravel were mined, each approximately 36 by 305 m (120 by 1000 ft). Activity in 2014 continued up Marten Creek.

Equipment and Water Treatment Equipment on site included a Hitachi UH 10 excavator and a Hitachi ZX 230 excavator. The wash plant, able to process 65 to 90 loose cubic yards (50 to 69 m^3) of gravel per hour, consisted of a floating trommel dredge plant with 5/16" screen, hydraulic riffles and a 32 ft conveyor stacker. Water was acquired from Fortymile River and Marten Creek depending upon location, and supplied using an electric engine-powered 4" Flygt pump at 700 igpm. Water was 100% recycled in an out-of-stream pond measuring approximately 36.6 by 15.2 by 1.5 m (120 by 50 by 5 ft). Clean ups were conducted using a wheel.

Surficial Geology and Stratigraphy The section consists of 2.4 to 6.1 m (8 to 20 ft) of gravel and 0.3 to 0.9 m (1 to 3 ft) of bedrock. All material was sluiced.

Bedrock Geology Bedrock is quartzite and quartz-muscovite-chlorite schist (Mortensen, unpub.).

Gold Characteristics Gold recovered is fine with the majority 20 mesh and approximately 5% greater than 10 mesh, with a fineness from 845 to 875.

Moose, a tributary of Fortymile

116C/02 2013: 64°13'07"N, 140°54'45"W

Foy, K., 2012-2013
Jones, D., 1995-2005, 2007-2009

Water License: PM04-359 (Active 2014)
Water License: PM04-359-1 (Active 2014)
Active Producer (2012-2013) **Operation no. 110**

Location Moose Creek, approximately 15 km downstream of the headwaters and the Top of the World Highway.

Work History and Mining Cuts Mr. Jones was not active in 2010 and 2011, but in 2012 a lease agreement between Mr. Jones and Mr. Foy was established. The water license was reassigned to Mr. Foy, and in 2013 he operated under PM04-359-1. Throughout 2012 sluicing occurred with activity on the left limit of Moose Creek. In 2012 and 2013 Mr. Foy and his crew mined in seven or more different locations. Each location measured at least 100 by 400 m (328 by 1312 ft). Mining continued down-stream from the 2012 cut.

Equipment and Water Treatment The equipment present in 2013 included three excavators, one bulldozer, and a trommel wash plant.

Surficial Geology and Stratigraphy A 1.6 m (5.2 ft) stratigraphic section downstream from the wash plant consisted of 0 to 0.25 m (0 to 0.8 ft) of pebbly gravel with a medium-grained sandy matrix and slightly imbricated, subrounded clasts. Unit 1 is oxidized and fines upwards with a wavy contact between the pebble gravel and the overlying fine-grained sediment. Unit 2 consists of interbedded fine and medium-grained sand, silt, and organic layers with predominately sand lenses up to 10 cm thick that extend from 0.25 to 0.90 m (0.8 to 3.0 ft). Load casts and flame structures are present in the lower sandy lenses above unit 1. Colluvium (unit 3) comprising cobble sized clasts and organics overlies unit 2 from 0.90 to 1.6 m (3.0 to 5.2 ft). An unknown amount of material has been stripped off the colluvium.

Bedrock Geology Bedrock is muscovite and quartz-rich schist and quartzite.

Gold Characteristics Not reported.

Mr. Foy's active cut on Moose Creek in 2013.

Moose, a tributary of Fortymile

116C/02 2013: 64°10'30"N, 140°54'39"W

Young, R., 1998-2000, 2004-2005, 2010-2013

Water License: PM04-419 (Active 2015)

Active Producer (2010-2013) **Operation no. 111**

Location Moose Creek, approximately 10 km downstream from the headwaters and the Top of the World Highway.

Work History and Mining Cuts Activity occurred from 2010 to 2012, with no specific work history known. In 2013, the left limit of Moose Creek was mined. Mr. Young allowed Mr. Foy and Mr. Jones to mine the reserve strip above the camp in 2013.

Equipment and Water Treatment In 2011, equipment included one Hitachi excavator, one Caterpillar D9G bulldozer, water pump, mobile sluice plant on tracks, and a trommel.

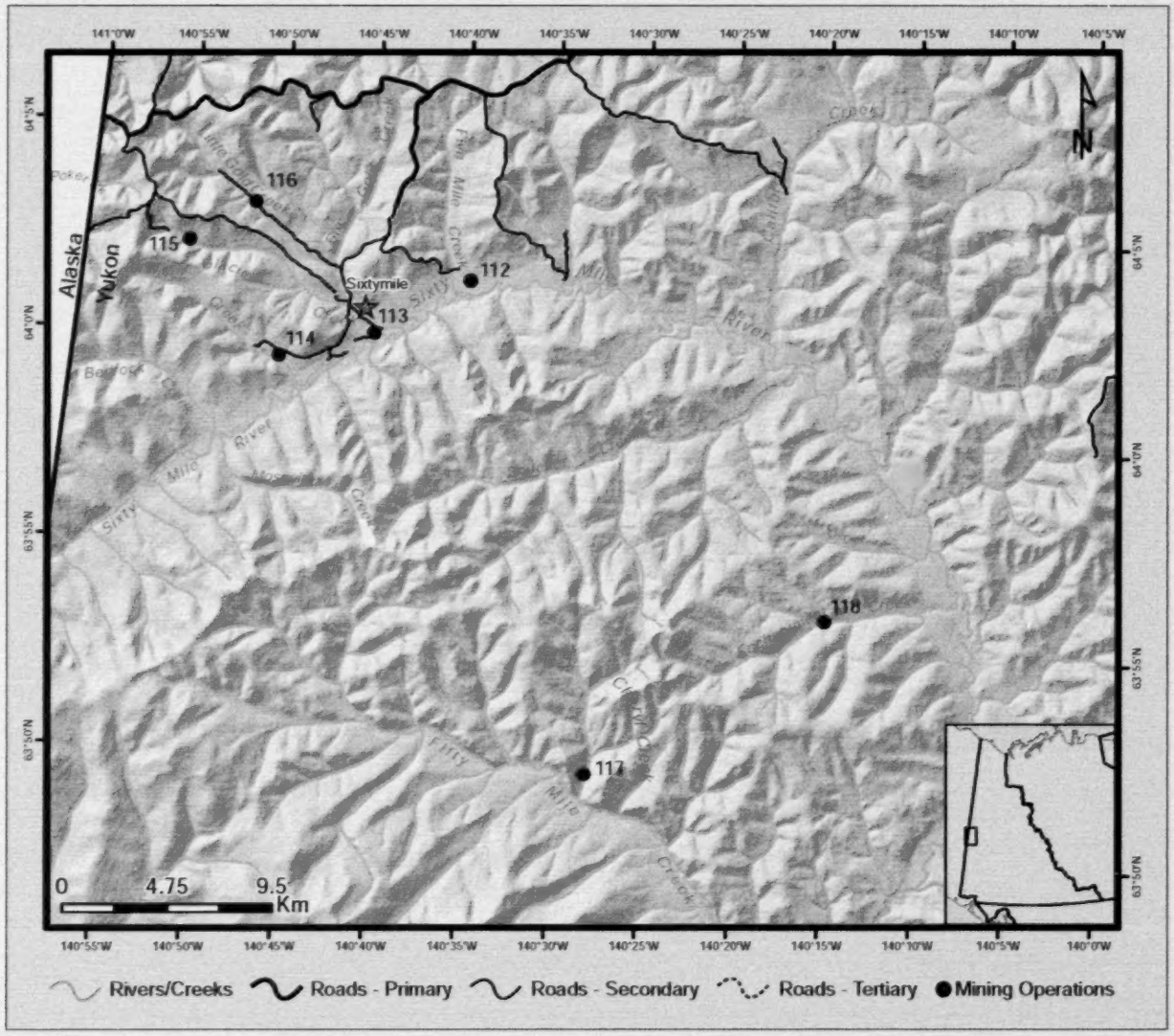
Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is orthogneiss (Mortensen, unpub.).

Gold Characteristics Not reported.

SIXTYMILE
PLACER AREA

SITES 112 - 118



LEGEND

112 ..... Hawk Mining
113 ..... K-1 Mining & Services
114 ..... Miller Creek Mining
115 ..... Hagen, G.
116 ..... Trautwein, A.
117 ..... Nordling, R. & Rudis, A.
118 ..... Fell-Hawk Placers

SIXTYMILE, A TRIBUTARY OF YUKON

116C/02 2013: 64°02'21"N, 140°38'31"W

Hawk Mining, 1989-2014

Water License: PM03-342A (Active 2014)
Active Producer (2010-2014) **Operation no. 112**

LOCATION Sixtymile River, near Five Mile Creek.

WORK HISTORY AND MINING CUTS Stripping and sluicing occurred throughout 2010 and 2011, with activity concentrated on the left limit of Sixtymile River valley. In 2011 the cut was 400 m (1,310 ft) in length and varied in width due to the overburden thickness. Ground on the left limit of the Sixtymile River valley was also sluiced in 2012, with crews working twenty-four hours a day. In 2013, the operation continued to strip ground and mine a 700 by 95 m (2296 by 312 ft) cut on the left limit that remained from the previous season. In 2013, a total of 75000 m^3 (2,648,600 ft^3) was mined.

EQUIPMENT AND WATER TREATMENT Not reported.

SURFICIAL GEOLOGY AND STRATIGRAPHY Minimal information reported aside from thick overburden, up to approximately 30 m (98 ft).

BEDROCK GEOLOGY Bedrock is basalt, breccia, andesite, porphyry, dacite, and trachyte (Mortensen, 1996).

GOLD CHARACTERISTICS Not reported.

SIXTYMILE, A TRIBUTARY OF YUKON

116C/02 2013: 64°00'49"N, 140°43'28"W

K-1 Mining & Services, 2008-2014

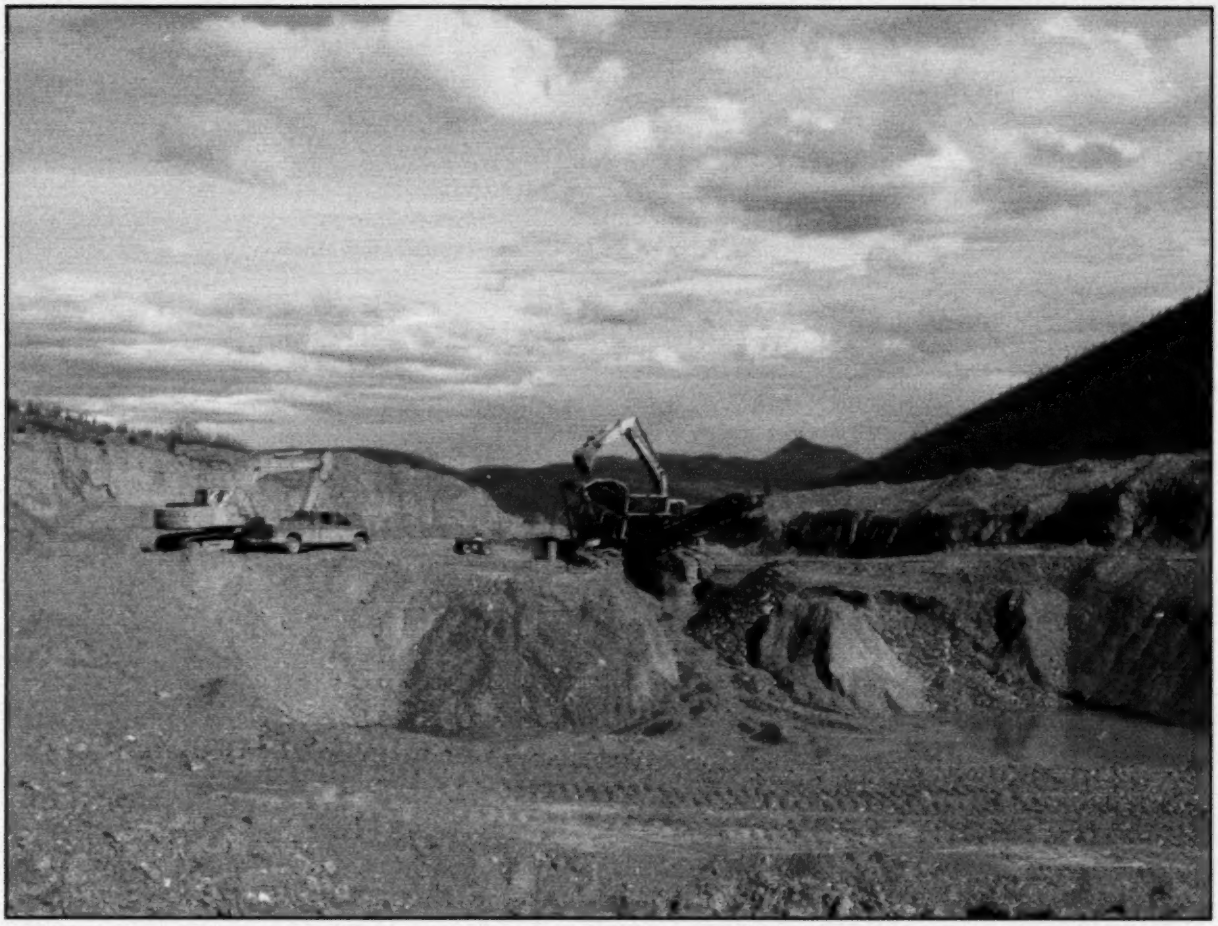
Water License: PM05-496 (Active 2015)
Water License: PM12-073 (Active 2023)
Active Producer (2010-2014) **Operation no. 113**

LOCATION Sixtymile River, upper, and mouth of Big Gold Creek.

WORK HISTORY AND MINING CUTS K-1 Mining operated 6 km upstream on Glacier Creek in 2010 and in 2011on a high-level left limit bench. The bench is 21m (70 ft) above the current stream channel and measured 76 m (250 ft) in width. In 2010 three miners and a camp staff member operated a daily twelve hour shift to mine a total of five cuts, equating to 11 148 m^2 (120,000 ft^2) of material. In 2011, they mined an area in five cuts totaling 11 566 m^2 (124,500 ft^2). Mining continued on the upper left limit bench in 2012 and also occurred on the right limit, 3 km below the left-limit bench cut. Throughout the 2012 season they mined an area covering 7 432 m^2 (80,000 ft^2) in a total of four cuts. Two locations were mined in 2013 – the mouth of Big Gold Creek and the upper Sixtymile River. A total of four cuts, covering 18 208 m^2 (196,000 ft^2) were mined by four miners and one camp staff member who operated a daily twelve hour shift. In 2014, the Sixtymile River cut was completed and operations were moved to Glacier Creek.

EQUIPMENT AND WATER TREATMENT Equipment in 2012 to 2013 included two Hitachi EX200 excavators, one Hitachi ZX270LC excavator, one Hitachi ZX450 LC-3 excavator, one 30 tonne Komatsu HM300-2 dump truck, one 20 tonne Moxy 5552B dump truck and one Komatsu D375A-2 crawler tractor with a Ublade and 4 BBL ripper. The wash plant consisted of a 5 ft diameter New Zealand trommel with 3/4" mesh and expanded metal over nomad carpet and hydraulic riffles. Tailings were stacked with a 35 ft long conveyor. An Isuzu diesel engine powered a 6 by 6" Indeg pump at 800 igpm was able to process 50 to 65 loose cubic yards (38 to 50 m^3) of gravel per hour. Water was acquired out of a stream pond on either Glacier Creek or Sixtymile River, depending upon mining location, and effluent was treated out of stream in old mine cuts in a series of three ponds approximated 76 by 46 m (250 by 150 ft). Clean ups were completed using a two-cell jig, followed by a long tom, and final upgrade by a gold wheel and hand panning.

SURFICIAL GEOLOGY AND STRATIGRAPHY The stratigraphic section, measured in 2010 and 2011, consists of 6.1 to 24.4 m (20 to 80 ft) of slide rock and colluvium overburden overlying 1.8 to 3.6 m (6 to 12 ft) of gravel. Bedrock surface undulations vary up to 4.6 m (15 ft) and a false bedrock consisting of colluvium is often present. Up to 1.2 m (4 ft) of gravel was processed along with 0.9 to 1.8 m (3 to 6 ft) of blocky bedrock from the bottom of the main channel. In 2012 the upper bench exposed 3.0 to 9.1 m (10 to 30 ft) of frozen slide rock (colluviated weathered bedrock) overlying 1.8 to 3.6 m (6 to 12 ft) of gravel on an undulating bedrock surface. Lower Glacier Creek cuts are capped by 4.6 m (15 ft) of the previous operators' tailings. The final cut consisted of 6.1 to 12.2 m (20 to 40 ft) of frozen overburden and 1.8 to 3.0 m (6 to 10 ft) of gravel on bedrock. Extensive old timer workings and test shafting are present at the final cut on lower Glacier Creek. Sluiced material included 1.2 to 2.1 m (4 to 7 ft) of gravel and up to 1.2 m (4 ft) of bedrock from the main channel. Throughout 2013 mining was focused in a former operators cut that had been partially mined. In un-mined areas of Big Gold Creek, frozen muck overburden is up to 6.1 m (20 ft) thick with gravel thickness ranging between 2.4 and 3.0 m (8 to 10 ft) on bedrock. Gravel, up to 2.4 m (8 ft) thick, is present in the Sixtymile



K-1 Mining's sluice operation in 2010 on left limit upper channel, Glacier Creek (Photo credit: M. McDougall).

River exposure and is imbricated, pervasively oxidized, dominated by medium-grained sand and has minimal boulder-sized clasts. The average sluice section was 1.5 m (5 ft) consisting of 0.3 to 0.6 m (1 to 2 ft) of gravel and up to 1.2 m (4 ft) of bedrock.

Bedrock Geology Bedrock is andesite and schist.

Gold Characteristics Gold recovered is coarse with a fineness of 860. Up to 15% of the gold is larger than 12 mesh and contains minimal fine gold. Some of the gold is stained black possibly from manganese and some nuggets include quartz.

Miller, a tributary of Sixtymile

115N/15 2014: 63°59'59"N, 140°48'35"W

Miller Creek Mining, 1991-2014

Water License: PM14-004 (Active 2024)
Active Producer (2010-2014) **Operation no. 114**

Location Miller Creek

Work History and Mining Cuts Mr. Murtagh conducted mechanical stripping on the left limit bench upstream from camp on Miller Creek in 2010. In 2011, they mined approximately 228 m (750 ft) upstream from Klondike Underground Mining Limited's workings from the 1990s. The operator planned to mine a further 300 m (1,000 ft) upstream with a total volume of material of 38228 m^3 (50,000 yd^3) for the season. Stripping and mining on the left limit bench continued throughout 2012 and 2013. In 2014, Mr. Murtagh mined a cut measuring 55 by 91 m (180 by 300 ft) on the left limit bench.

Equipment and Water Treatment In 2014, there were two Hitachi Zaxis 330 excavators on site and used for digging pay and stripping. A Hitachi Zaxis 200 was used for feeding the plant and two Komatsu HM 300 haul trucks were used for delivering pay and hauling tailings. The wash plant consisted of an 8 by 8 ft dump box and a 33 ft trommel that screened to 3/4" and includes a scrubber section at the last 8 ft. The sluice system consisted of two 30" by 8 ft runs that flow into six 6 ft runs with hydraulic riffles.

Surficial Geology and Stratigraphy The left limit bench on Miller Creek has been the primary placer target for many years. As recently as the 1990s, underground mining occurred in a similar deposit to what Mr. Murtagh was mining in 2014. The overburden stratigraphy consists of 2.5 m (8 ft) of muck and 18 to 24 m (60 to 80 ft) of poorly sorted massive cobble-pebble gravel with minor boulders. Underlying the muck and cobble-pebble gravel is 60 cm (2 ft) of laterally continuous dense grey and orange silt that overlies 1.8 m (6 ft) of coarse pebble-cobble-boulder pay gravel. The origin of the dense silt layer, which contains some pebbles, is uncertain and may represent fines deposited by overbank flooding. The pay gravel under the silt is poorly sorted, coarse, contains abundant subangular clasts and generally is a clast supported gravel. The pay gravel and 1.8 m (6 ft) of bedrock is sluiced. An increase in the pay concentration occurs where bedrock highs cause the pay gravel to thin. The total width of the high-grade pay channel is 45 m (150 ft).

The description of the overburden stratigraphy for the lower Miller Creek bench in 2014 is similar to that described by Hughes and Morison (1986). They describe the overburden gravel as an alluvial fan sequence with a general lack of sedimentary structures. The lack of concentrating stream flow that deposited this unit is likely tied to a climatic event that caused rapid sedimentation in the drainage. Typically this occurs during glacial periods, which would suggest the thick overburden gravel sequence may represent an early Pleistocene pre-Reid glacial or periglacial gravel. This would imply that the pay gravel could be associated with a non-glacial climate perhaps from the late Pliocene or early Pleistocene. Additional geological studies are recommended to understand the origin of these deposits.

Exposure of the left limit bench gravel in lower Miller Creek. The pick is leaning against the pay gravel which is overlain by a laterally continuous silt and upwards of 24 m (80 ft) of gravel.

Bedrock Geology Interlayered dark grey, graphitic quartz-muscovite schist (metasiltstone), muscovite-bearing quartzite, and orange-weathering (limonitic) quartz-muscovite schist. The limonitic quartz-muscovite schist locally contains small quartz augen (Allan, *pers. comm.*).

Gold Characteristics A majority of the gold is greater than 35 mesh, with localized nuggets up to 1 to 2 cm in length and a fineness of 820. The nuggets are generally reshaped and have rough edges indicating a moderate to proximal transport distance. A few of the nuggets have a smoother surface and appear pounded, which would suggest moderate to distal transport.

Glacier, a tributary of Big Gold

116C/02 2013: 64°02'29"N, 140°54'21"W

Hagen, G., 1983-1984, 1998-2001, 2007-2012

Water License: PM05-500 (Active 2016)
Active Producer (2010-2012) **Operation no. 115**

Location Glacier Creek, upper.

Work History and Mining Cuts Mr. Hagen has a small operation on Glacier Creek. In 2010, he stripped a cut on the left limit, downstream from his camp. Mining continued downstream from camp in 2011 on the right limit of Glacier Creek. Activity was noted on Glacier Creek in 2012 but no specific information was documented. There is no activity reported for 2013 or 2014.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is chlorite-biotite schist, amphibolite, gneiss, and quartzite (Mortensen, unpub.).

Gold Characteristics Not reported.

Little Gold, a tributary of Big Gold

116C/02 2013: 64°03'35"N, 140°50'58"W

Trautwein, A., 2010, 2012-2013

Water License: PM12-016 (Active 2017)
Active Producer (2010, 2012-2013) **Operation no. 116**

Location Little Gold Creek, approximately 4.8 km upstream from its confluence with Big Gold Creek.

Work History and Mining Cuts Mr. Trautwein had a small one-man operation in 2010 under a schedule 3 testing license. His 2012 mining program was a continuation of the previous testing program, with stripping and mining conducted on the left limit bench. Additional testing occurred upstream from the main mining location, on the right limit. In 2013 Mr. Trautwein continued to mine the left limit with limited specific details reported.

Equipment and Water Treatment Equipment included two Caterpillar D7s, two excavators, and one sluice trommel on wheels. Effluent was settled out of stream.

Surficial Geology and Stratigraphy Overburden is frozen and varies in thickness, with a maximum depth of 15 m (50 ft).

Bedrock Geology Bedrock is quartzite and quartz-muscovite-chlorite schist (Mortensen, unpub.).

Gold Characteristics Not reported.

Cheryl, a tributary of Fifty Mile

115N/16 2013: 63°50'45"N, 140°29'53"W

Nordling, R. and Rudis, A., 2014

Water License: PM12-022 (Active 2022)
Active Producer (2014) **Operation no. 117**

Location Cheryl Creek, a tributary of Fifty Mile Creek.

Work History and Mining Cuts In 2013, the first activity under an option agreement to P. Joseph occurred on Fifty Mile Creek and its surrounding tributaries. The work included a bulk testing program that was conducted by a crew of five miners. The 2013 cut was excavated on the left limit, upstream from the 2005 exploration workings. Additional exploration and testing occurred in 2014 that helped define target thicknesses for sluicing.

Equipment and Water Treatment Equipment used included a Caterpillar D9N bulldozer, a Hitachi 450 excavator, and a Hitachi EX200 excavator. The wash plant used was a 6 by 14ft screen deck feeding a 16 by 8 ft sluice run with hydraulic riffles. Final clean-ups were done using a gold wheel.

Surficial Geology and Stratigraphy The stratigraphic section is variable with an organic layer up to 0.9 m (3 ft) thick and gravel from1.8 to 4.3 m (6 to 14 ft) thick. Most of the gravel section was sluiced down to bedrock (LeBarge, *pers. comm.*).

Bedrock Geology Bedrock is amphibolite, quartz-mica schist, and phyllite (INAC, Open File 1996-1(G)).

Gold Characteristics The gold is described as travelled with some smaller angular pieces. Gold grain sizes are around 16 to 20 mesh and the fineness is between 890 and 910.

Enchantment, a tributary of Sixtymile

115N/16 2014: 63°55'14"N, 140°16'36"W

Fell-Hawk Placers, 2014

Water License: PM10-040 (Active 2022)
Active Producer (2014) **Operation no. 118**

Location Enchantment Creek, a tributary of Sixtymile River.

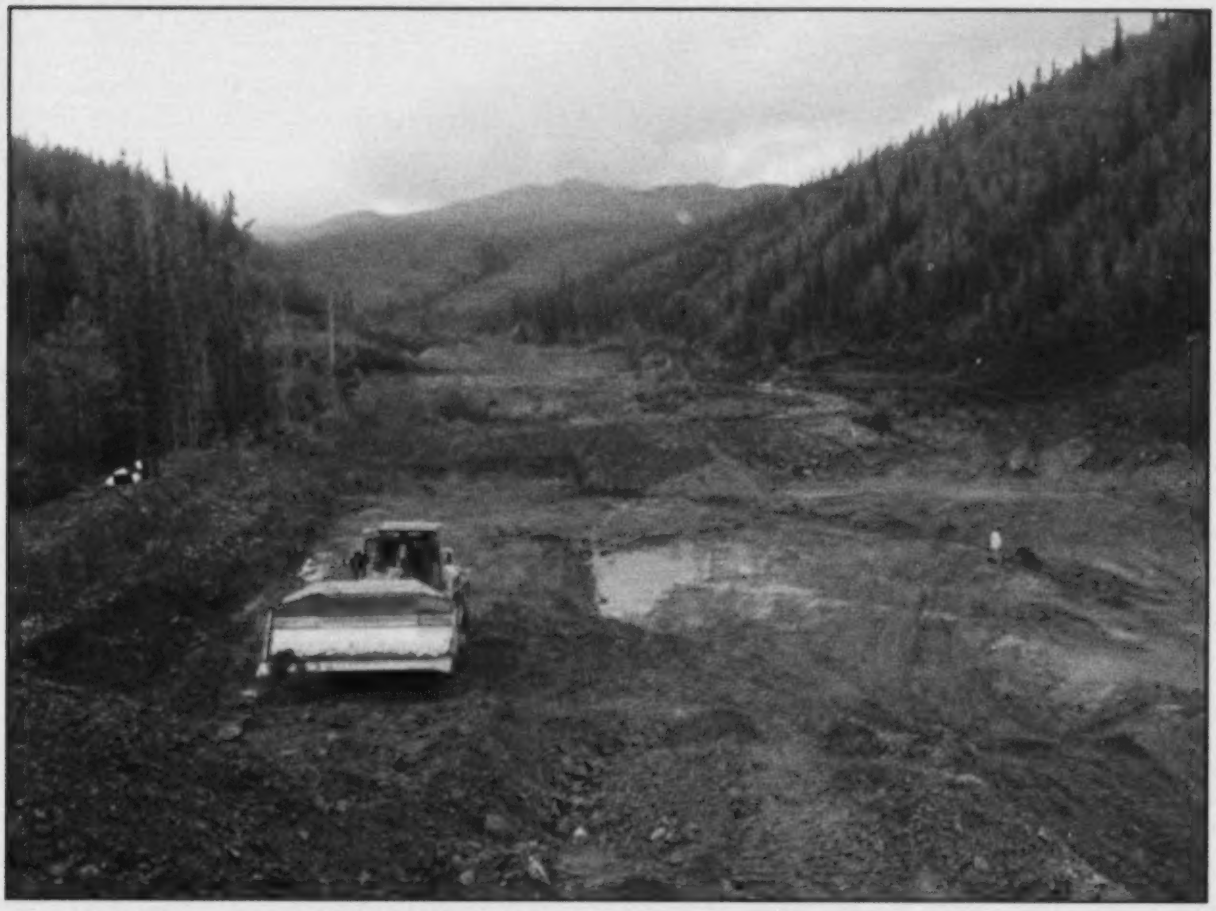
Work History and Mining Cuts The first year of mining on Enchantment Creek for Fell Hawk Placers was 2014. A crew of three miners worked to mobilize equipment onto the claims and initiate production. A total of 25 days of mining was completed by the crew, working single 11.5 hour shifts daily. The cut size measured 30 by 107 m (100 by 350 ft).

Equipment and Water Treatment Equipment on site in 2014 included a Caterpillar D8K bulldozer, a Caterpillar 324 excavator, and a Caterpillar 730 articulated truck. The wash plant consisted of an Elrus 5 by 16 ft double shaker capable of processing 200 loose cubic yards (153 m^3) per hour.

Surficial Geology and Stratigraphy The stratigraphy is relatively shallow on Enchantment Creek and consists of 1.2 m (4 ft) of silt overlying 2.4 m (8 ft) of coarse gravel containing boulders. A total of 0.6 m (2 ft) of gravel and 1 m (3 ft) of bedrock was sluiced.

Bedrock Geology Bedrock is amphibolite, quartz-mica schist, and phyllite (Mortensen, 1996).

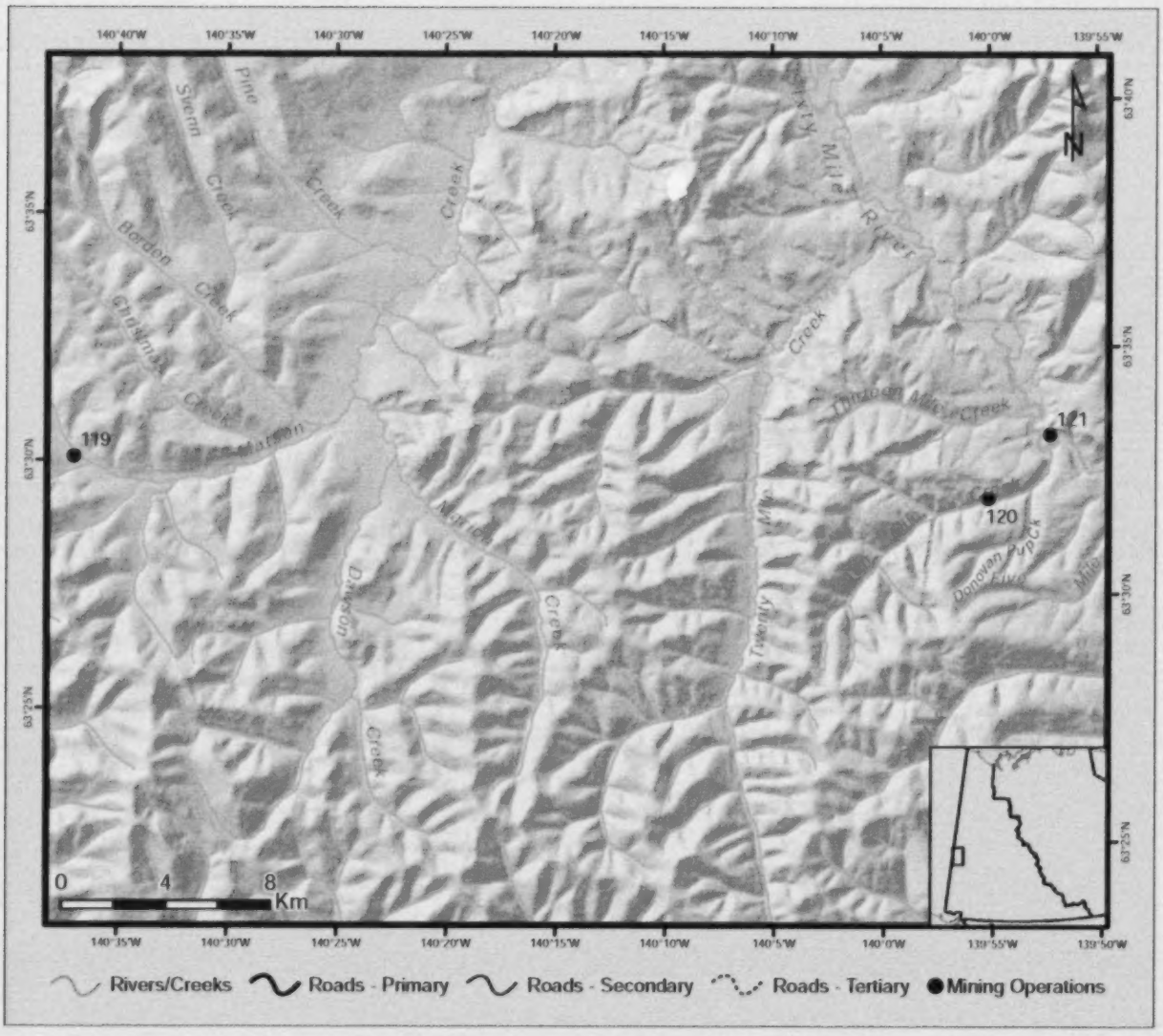
Gold Characteristics Gold is described as flakey and fine, and measures less than 10 mesh.



A view of the 2013 cut on Cheryl Creek (Photo credit: Paul Joseph).

MATSON
PLACER AREA

SITES 119 - 121



LEGEND

119 ..... Magna North Gold Ltd.
120 ..... No Name Resources Inc.
121 ..... Midas Rex Mining and Exploration Inc.

MATSON, A TRIBUTARY OF SIXTYMILE

115N/10 2014: 63°30'09"N, 140°39'41"W

Magna North Gold Ltd., 2001-2014

Water License: PM04-425, AP04425 (Active 2015)

Active Producer (2010-2014) **Operation no. 119**

LOCATION Matson Creek, two locations in 2014: upper Matson Creek, right limit, approximately 8 km upstream from Christmas Creek; and, lower Matson Creek, right limit bench near the mouth of an unnamed tributary, approximately 5 km upstream from Christmas Creek.

WORK HISTORY AND MINING CUTS For the period 2010 through 2014 Magna North Gold Ltd. was active on the site and the general activity included stripping, sluicing and reclamation. In 2014, three personnel worked at two locations on Matson Creek. The lower cut was located on a right limit bench near the mouths of two tributaries (immediately below camp). The upper cut was located upstream of camp on the right limit of the valley bottom. Mining at the upper location required significant stripping to remove loess overburden so sluicing was delayed until late in the season. The upper cut measured 30 by 124 m (100 by 415 ft).

EQUIPMENT AND WATER TREATMENT Equipment in 2014 included two Volvo 360 excavators, a Volvo A35E rock truck, Caterpillar D10 bulldozer, and Caterpillar D11 bulldozer. The wash plant consisted of a 14 by 10 ft hopper attached to an El Russ 6 by 16 ft screen deck, lined with the New Era riffle system and Nomad matting. Matrix rich

View to the south of Magna North's upstream cut on the right limit of Matson Creek in 2014.

View to the south of Magna North's lower cut on a right limit bench of Matson Creek in 2014. The camp is located on the right hand side of the photo.

material is processed at a rate of 200 to 250 loose cubic yards (153 to 191 m^3) per hour, whereas coarse material can be processed at up to 400 loose cubic yards per hour. Two mobile test plants consisting of long toms are used for exploration. Clean ups are conducted using a jig.

Surficial Geology and Stratigraphy In 2014, two cuts were mined that have different surficial geology and stratigraphy. The lower cut exposed a right limit bench of Matson Creek near the mouths of two tributaries. The pay gravel on the bench occurs as a meandering channel with distinct characteristics from the non-auriferous gravel. The pay is described as a blonde coloured (lightly oxidized) gravel that is coarser, denser, and thicker than the surrounding unoxidized grey gravel. The blonde pay gravel meanders on the bench surface and is generally challenging to follow. The highest grade section of the channel may be only 3 m (10 ft) wide on the bench surface but typically a wider cut of approximately 20 m (65 ft) is mined. The stratigraphy of the bench deposits consist of 2 m (8 ft) of muck overlying 3.5 to 6 m (12 to 20 ft) of gravel. The upstream cut is located on the right limit of the valley bottom at the base of the right limit bench. The stratigraphy consists of frozen loess (windblown silt) overlying fluvial gravel. The loess thickness is variable and reaches 9 m (30 ft) at the base of the right limit bench. The gravel thickness varies from 2 m (6 ft) to 6 m (20 ft) and is an imbricated coarse sandy pebble gravel with minor cobbles and boulders. The lower 30 cm (1 ft) of gravel is sluiced along with 1 m (3 ft) of bedrock.

Bedrock Geology Bedrock is a blocky to platey grey quartzite and schist that weathers brown. Faults present in the bedrock contain grey gouge.

Gold Characteristics Gold is coarse, particularly on the benches; grains are commonly between 3 to 5 mm and up to 15 mm. This makes drilling particularly challenging on the benches.

View looking downstream on 10 Mile Creek of the Johnson's left limit operation in 2014. A prominent left limit bench is visible approximately half way up the slope.

Ten Mile, a tributary of Sixty Mile

115O/12 2014: 63°31'37"N, 139°57'32"W
115O/12 2014: 63°31'52"N, 139°55'45"W

No Name Resources Inc., 2010-2014
Water License: PM06-532 (Active 2015)
Active Producer (2010-2014) **Operation no. 120**

Location Ten Mile Creek, 3.4 km upstream from its confluence with Sixty Mile River and Donovan Pup.

Work History and Mining Cuts In 2010, starting in August and ending in October, six miners and one camp staff operated two daily ten hour shifts. Throughout 2010, three major cuts were mined, each approximately 60 by 90 m (200 by 300 ft). The work history for 2011 consisted of stripping, settling pond construction, equipment maintenance, and mining. Five miners and one camp worker mined four cuts that included: two 30 by 90 m (100 by 300 ft) cuts on the left limit side pay and two 60 by 90 m (200 by 300 ft) cuts located in the middle of the valley. During 2012, reclamation was on-going and at the end of the season the operator, Mr. Dulac, moved to another location. Mr. Johnson and Mr. Eliason mined a cut in 2013 at the confluence of Ten Mile Creek and Donovan Pup, and continued mining upstream near the mouth of Donovan Pup. In 2014, Mr. Johnson continued mining up 10 Mile Creek and was focused on the left limit near the confluence with Abraham Gulch. Prospecting also continued on Donovan Pup.

Equipment and Water Treatment Equipment in 2010 and 2011 included a Caterpillar D9H, Fiat-Allis HD31 bulldozer, John Deere 270 loader, Caterpillar 235B excavator, Caterpillar 988A excavator, and a Caterpillar 769B rock truck. The wash plant was a Derocker fed into 8 ft wide runs with boil boxes, hydraulic riffles, and expanded metal. In 2011 the Derocker included a Model 100 Gold Machine insert. In 2010 the wash plant processed 50 loose cubic yards (38 m^3) of gravel per hour with water supplied

by an 8 by 10" pump powered by a Detroit 453 engine. The processing rate increased in 2011 to 80 to 100 loose cubic yards (62 to 76 m^3) of gravel per hour. Water was supplied at 1200 igpm from an intake ditch on Ten Mile Creek using a by a 10 by 12" pump that was powered by a Caterpillar 3408 diesel engine. Water treatment in 2010 consisted of in-stream settling below the canyon in two ponds that measured 30 by 60 m (100 by 200 ft). In 2011 the effluent treatment system was changed to out-of-stream. Clean-ups in 2011 were completed weekly using a small screener, hydraulic riffles, long tom, and jig. Equipment in 2014 included a John Deere 270C excavator, John Deere 330C excavator, and Caterpillar D9H bulldozer. The wash plant consisted of a 5 ft diameter by 16 ft long trommel with 1/2" screen and a conveyor to displace tailings. A nugget trap at top fanned into four sluice runs, each 2 ft wide by 12 ft long, consisting of expanded metal and nomad matting. The land based and modified New Zealand trommel, supplied by a 10" pump, can process 60 to 120 loose cubic yards (46 to 92 m^3) per hour.

Surficial Geology and Stratigraphy The stratigraphic section, as measured in 2010 and 2011, consists of 0.6 to 1.8 m (2 to 6 ft) of pay gravel and 3.0 to 4.6 m (10 to 15 ft) of frozen black muck. Bedrock varies from being solid to decomposed and undulating in nature. Sluiced material included 0.6 to 1.2 m (2 to 4 ft) of gravel and 0.6 m (2 ft) of bedrock. The left limit stratigraphy of 10 Mile Creek near Abraham Gulch consists of 3 to 5 m (10 to 16 ft) of loess and peat overburden overlying 2 to 3 m (6 to 10 ft) of moderately stratified pebble-cobble gravel with minor boulders. Most of the clasts have an angular to subangular shape and the gravel contains silt and woody layers. The gravel resembles a high energy fluvial environment likely deposited during a flood. Fewer granitic clasts are present in the gravel as mining progresses towards Abraham Gulch. Mining at the mouth of Donovan Pup exposes interbedded coarse cobble gravel and silty organic beds containing woody debris. Placer distribution appears controlled by the character of a marble bedrock that is exposed on the valley walls and in the valley

View looking up Donovan Pup from its confluence with 10 Mile Creek. Outcrops of marble are visible on the ridges on either side of the pup. Marble is a relatively resistant rock and creates a narrow valley in the lower part of the drainage.

bottom. Gold was mined near the mouth where the marble unit is fractured creating a rough surface and is in contact with sandstone and thin dykes. At the upstream end of the cut the marble unit becomes more resistant and rises causing the fluvial gravel to become thin and less auriferous.

Bedrock Geology Bedrock is brown schist on 10 Mile Creek and white marble on Donovan Pup.

Exploration Potential On 10 Mile Creek, there are at least two levels of benches above the modern floodplain. Depending on the origin of the lode gold source in the valley these benches present good targets for future exploration. In Donovan Pup, exploration is recommended upstream of the marble unit where a different rock type may present both a better gold source and a better bedrock surface texture. Potential gold traps may be present on the marble bedrock surface where it becomes more fractured possibly due to faulting or additional dike intrusions.

Gold Characteristics Gold recovered is bright with 50% 20 mesh and 10% nuggets, with the largest nugget recovered weighing 3/4 oz. The gold has an angular shape. Fineness varies from 830 to 840.

Ten Mile, a tributary of Sixtymile

115O/12 2013: 63°33'03"N, 139°55'02"W

Midas Rex Mining and Exploration Inc., 2006-2009, 2013

Water License: PM05-492 (Active 2015)

Active Producer (2013) **Operation no. 121**

Location Ten Mile Creek, confluence of Ten Mile Creek and Sixtymile River.

Work History and Mining Cuts A lease agreement from Schmidt Mining allowed Mr. Johnson and his crew to operate in 2013. Mining activity occurred adjacent to the mouth of Ten Mile Creek on the right limit of Sixtymile River.

Equipment and Water Treatment Not reported.

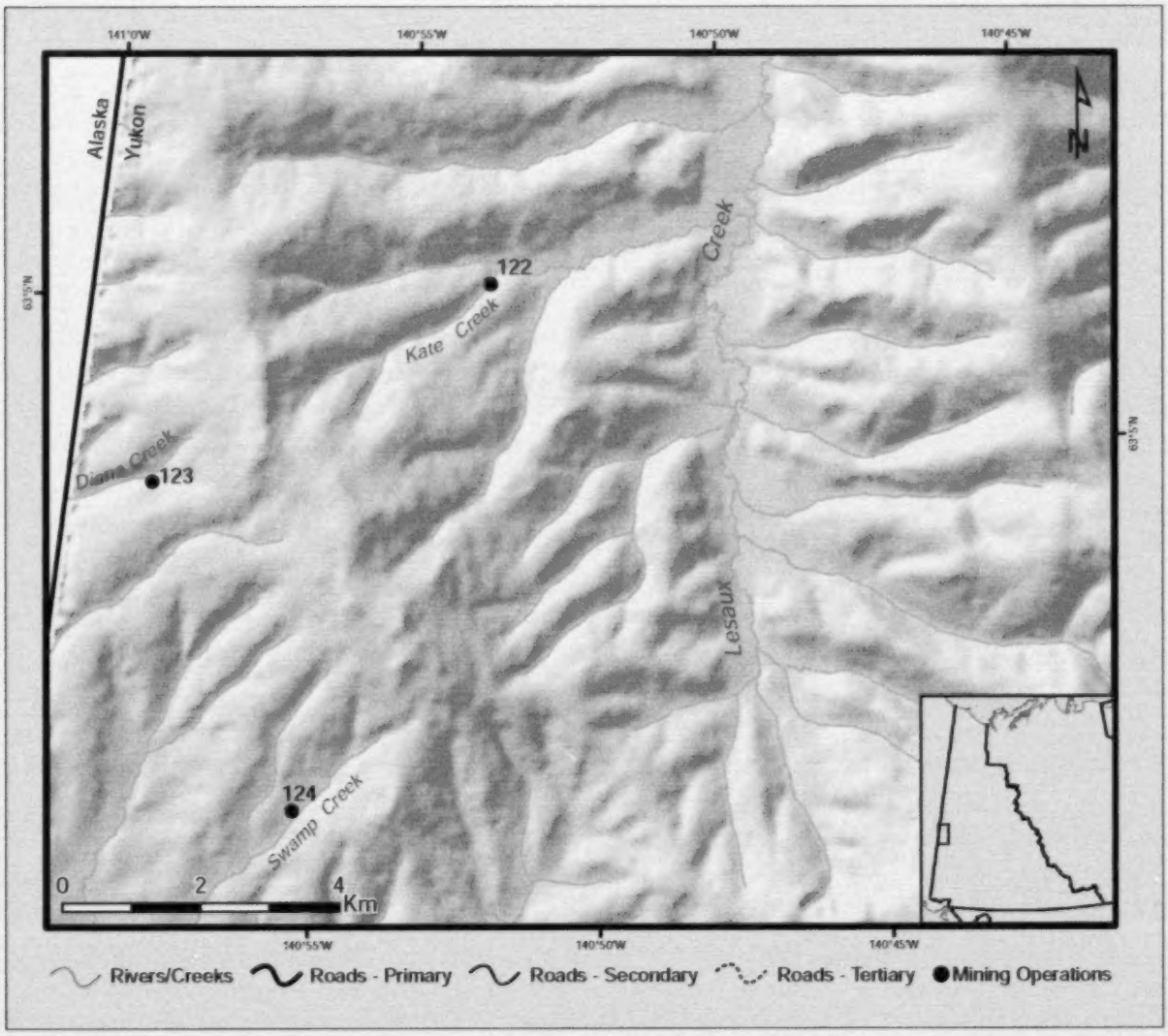
Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is marble (Bostock, 1942).

Gold Characteristics Not reported.

MOOSEHORN
PLACER AREA

SITES 122 - 124



LEGEND

122 ..... Moosehorn Exploration Ltd.
123 ..... Moosehorn Exploration Ltd.
124 ..... 1462352 Alberta Inc.

KATE, A TRIBUTARY OF LESAUX CREEK

115N/02 2014: 63°05'30"N, 140°53'17"W

Moosehorn Exploration Ltd., 1989-1992, 1999-2014

Water License: PM06-528 (Active 2017)

Active Producer (2010-2014) **Operation no. 122**

LOCATION Kate Creek, approximately 4 km upstream from its confluence with Lesaux Creek.

WORK HISTORY AND MINING CUTS In 2010 and 2011 Moosehorn Exploration Ltd. stripped and sluiced a section of the Kate Creek channel. No details were provided for the 2012 season. In 2013, the Warrick's mined from April to September focusing on upper Kate Creek and its tributaries. In 2014, work focused on mining near camp and exploration on upper Diana Creek on the south side of the Moosehorn Range.

Ian Warrick demonstrates his custom built magnetic separator used for cleaning concentrates.

EQUIPMENT AND WATER TREATMENT Equipment used on Kate Creek from 2010 to 2014 included a Caterpillar 345B excavator, Hitachi 350 excavator, Caterpillar 980G loader, Caterpillar 8N bulldozer, and two Terex TA30 rock trucks. The wash plant consisted of a wet dump box and 3/4" grizzly feeding an upper sluice run that measures 4 by 10 ft and three lower sluice runs totaling 10.5 ft wide and 12 ft long. The sluice runs were lined with 3/4" expanded metal, 2" hydraulic riffles, 1¼" angle iron riffles and Nomad matting. The plant processed 60 loose cubic yards (46 m^3) per hour. Water was 100% recycled. Clean-ups were completed after 30 hours of sluicing using a jig and custom built magnetic separator.

SURFICIAL GEOLOGY AND STRATIGRAPHY On the right limit near camp, the exposure consists of three units. Unit 1, from 0 to 3.8 m (0 to 12.5 ft) is a pebble-cobble gravel with minor boulders that is poorly sorted, and clast dominant

A view of Moosehorn Exploration Ltd's mining cut in 2014 near their camp.

with a matrix consisting of 60% coarse sand and 40% silt. Unit 2, from 3.8 to 5.0 m (12.5 to 16.5 ft) consists of a clast supported boulder gravel with 60-80% boulders with equal cobbles and pebbles. Its 30% matrix composition is silty coarse sand and the maximum clast is 1 m (3.3 ft). Overbank material comprises Unit 3, from 5.0 to 5.6 m (16.5 to 18.5 ft) and is fluvial sand, silt, and organics. The boulder-rich units in units 1 and 2 may represent reworked glacial moraine that originated from early Pleistocene alpine glaciation on the Moosehorn Range.

Bedrock Geology Bedrock is granodiorite and varies in degree of decomposition.

Gold Characteristics Gold is all fine with an abundance of 150 mesh. It is hackly and shiny, with an average fineness of 800.

Diana, a tributary of McArthur Creek

115N/02 2014: 63°03'39"N, 140°58'37"W

Moosehorn Exploration Ltd., 1989-1992, 1999-2014

Water License: PM08-607 (Active 2018)
Active Producer (2010-2014) **Operation no. 123**

Location Diana Creek, approximately 1.2 km upstream from the Canada-United States border.

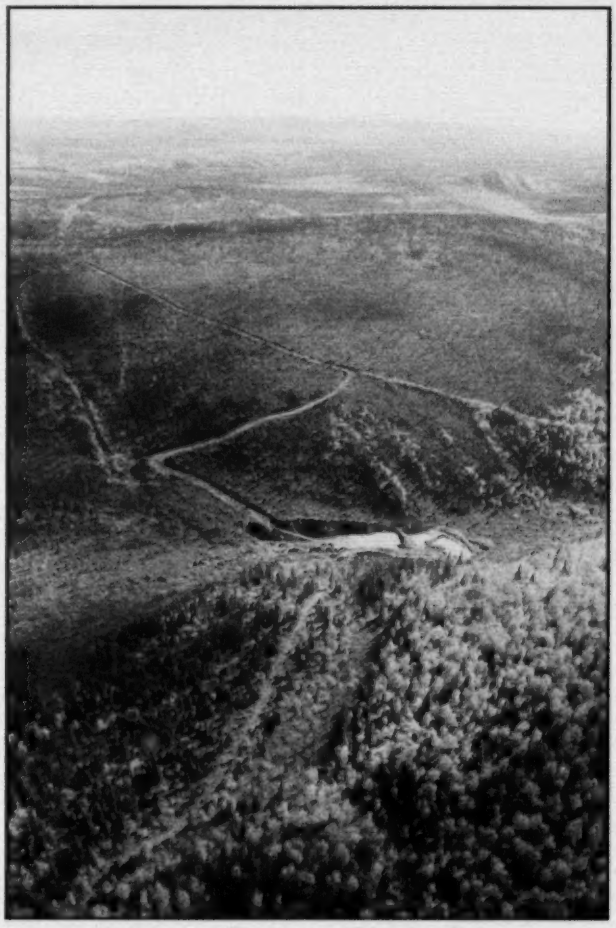
Work History and Mining Cuts In 2014, exploration work consisted of bulk sampling at the confluence of two upper forks.

Equipment and Water Treatment Equipment used for the bulk sample consisted of two excavators used for mining and feeding the plant. A Caterpillar D8H bulldozer was used for building roads and constructing dams. A Caterpillar 966C loader was used for removing tailings. The wash plant consisted of a wet dump box feeding a 3/4" grizzly and 4 by 20 ft sluice run lined with 3/4" expanded metal, 2" hydraulic riffles, 1¼" angle-iron riffles and Nomad matting. Water was acquired from Diana Creek and held in two in-stream reservoirs that doubled as settling ponds.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is granodiorite, diorite, and monzodiorite (Tempelman-Kluit, 1974c).

Gold Characteristics Not reported.



Aerial view of activity on Diana Creek in 2014.

Swamp, a tributary of Scottie

115N/02 2014: 63°01'17"N, 140°55'30"W

1462352 Alberta Inc., 2005, 2007, 2012-2014

Water License: PM04-434 (Closed 2010)
Water License: PM10-041 (Active 2016)
Active Producer (2012-2014) **Operation no. 124**

Location Swamp Creek, east fork.

Work History and Mining Cuts Evidence of test pitting on the left limit of upper east fork of Swamp Creek was present in 2014. Mining appeared to have occurred in the valley bottom, focused on the right limit. In 2014, two employees mined a cut (80 by 300 yd) and sluiced a total of 2000 loose cubic yards.

Equipment and Water Treatment Equipment included a Caterpillar 235D excavator, Terex 8240 bulldozer, Caterpillar D7 bulldozer, and Trojan 2500 loader. The wash plant was a Tyler 10 by 4 ft horizontal screen deck. Water was acquired from the east fork of Swamp Creek and supplied to the screen deck by a 6 by 8" Gorman Rupp pump. Effluent was treated in-stream in one settling ponds. Clean-ups were conducted using a 3 by 5 ft shaker table.

Surficial Geology and Stratigraphy The stratigraphic section consists of 8 m (26 ft) of gravel and 2 to 3 m (6.6 to 9.8 ft) of overburden. All gravel was sluiced.

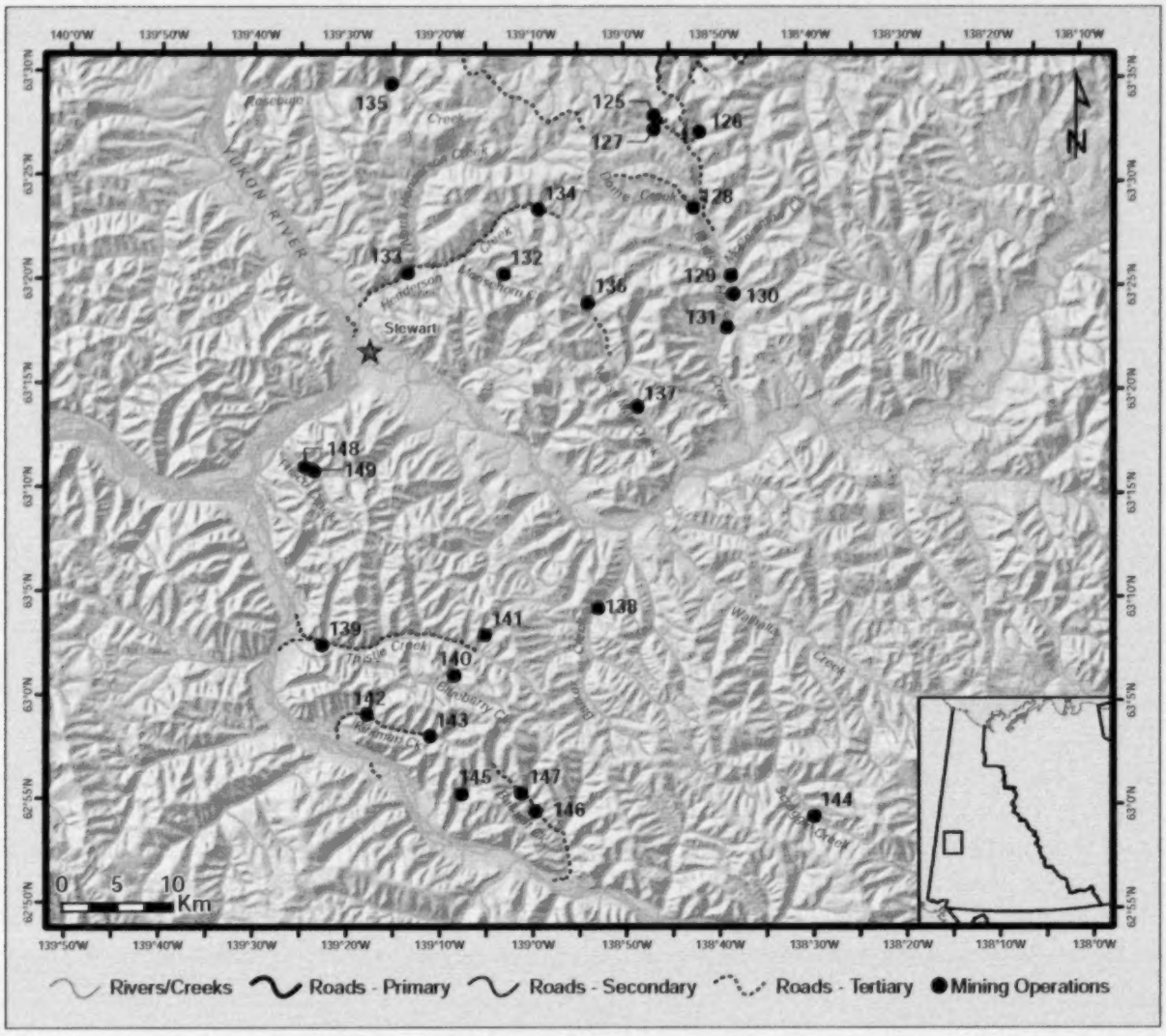
Bedrock Geology Bedrock is decomposed granodiorite, diorite, and monzodiorite.

Gold Characteristics Gold is all fine, dull, and varies from flat to equidimensional. The fineness is 820.

Aerial view in 2014 of Mr. Hartley's operation on upper Swamp Creek.

SOUTH KLONDIKE PLACER AREA

SITES 125 - 149



LEGEND

125 ..... R. Smith Placer Mining Ltd.
126 ..... Klippert, K.
127 ..... Paydirt Holdings Ltd.
128 ..... Armstrong, W.
129 ..... Hughes, S.
130 ..... Stuart Placers
131 ..... SANDL Mining Ltd.
132 ..... Vincent, M.
133 ..... H.C. Mining Ltd.
134 ..... Northen Gold Resources ULC
135 ..... Paycore Enterprises Ltd.
136 ..... Christiansen, A.
137 ..... Bedrock Mining Company Inc.
138 ..... Midas Rex Mining Inc.
139 ..... Schmidt, S.
140 ..... Sager, M.
141 ..... Walsh, P. & Sager, M.
142 ..... Sager, M.
143 ..... Fell Hawk Placers
144 ..... Bidrman, Z.
145 ..... Fischer, W.
146 ..... Weber, B.
147 ..... Fellers, J.
148 ..... New Age Drilling & Mining
149 ..... Stretch, E.

Black Hills, a tributary of Stewart

115O/10 2014: 63°31'00"N, 138°55'49"W

R. Smith Placer Mining, 1996-1998, 2007-2014

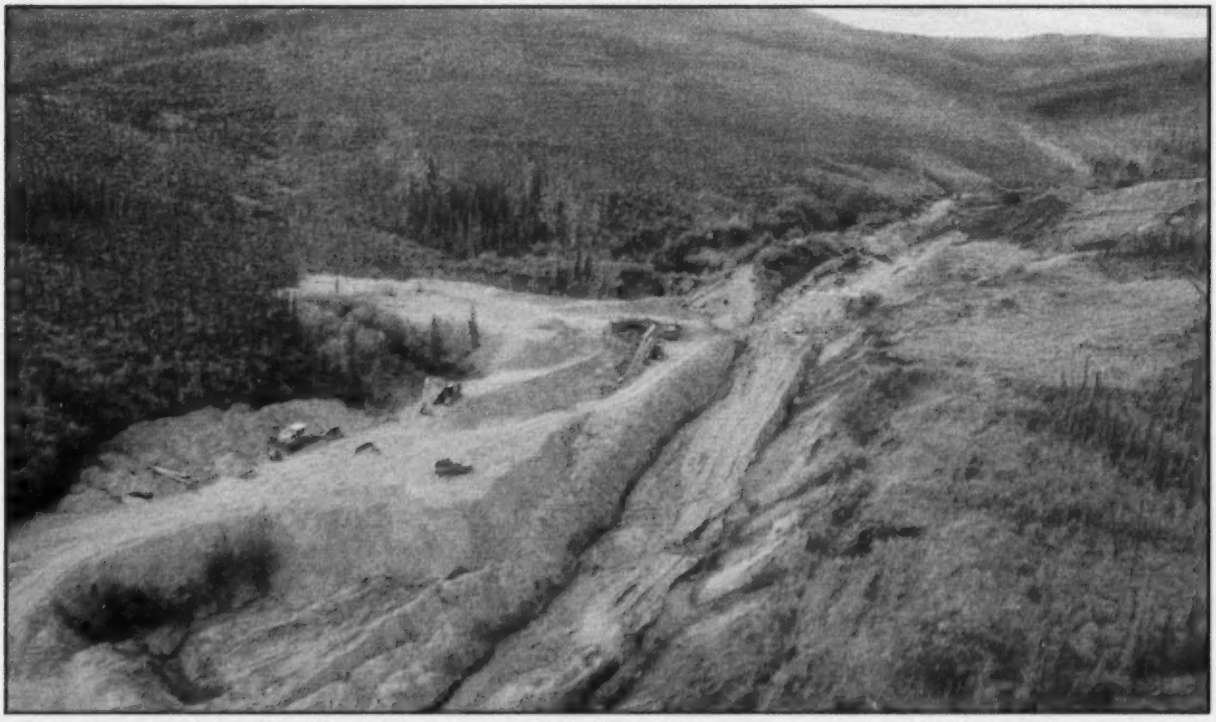
Water License: PM06-508 (2016)
Active Producer (2010-2014) **Operation no. 125**

Location Black Hills Creek, upper, 1.3 km upstream from the Black Hills forks.

Work History and Mining Cuts Current mining is focused on the left limit of the valley bottom where the pay channel is located. In 2010 and 2011, a large left limit bank exposure was mined roughly 200 m downstream of the sluice plant location. Monitoring and mining a left limit cut continued 200 m upstream of previous years cuts in 2012 and 2013. Three miners and one camp personnel operated on the left limit of Black Hills Creek at the mouth of an unnamed left limit tributary in 2014, upstream from the previous year's cut.

Equipment and Water Treatment From 2010 to 2013, equipment included two rock trucks (Caterpillar D400E and Caterpillar D300E), three excavators (Hitachi 330, 350, and Caterpillar 345), three bulldozers (Caterpillar D6, D8, D9), and one Caterpillar 996 wheeled loader. The wash plant consisted of a 4 ft diameter trommel feeding into three sluice runs, each 4 ft wide and 10 ft long. The sluice was lined with Nomad matting, 1½" expanded metal, 2" hydraulic riffles, and 1½" angle-iron riffles. Water was acquired from Black Hills Creek at 1000 igpm using a 6 by 6" pump, powered by a Ford industrial diesel engine. Discharge was to Black Hills Creek with no recirculation. The wash plant processed 60 loose cubic yards (46 m^3) of gravel per hour. The final stages of clean-up were done using a long tom, gold wheel, and pan.

Surficial Geology and Stratigraphy The 2010 mine cut consisted of two units. Unit 1 is an oxidized, poorly exposed, clast supported, angular to subangular, pebble-cobble gravel that is located on bedrock. This unit is 1.5 m (4.9 ft) thick and is the pay zone. Unit 2 extends from 1.5 to 11.5 m (4.9 to 37.7 ft) and consists of loess with organics, minor wood fragments, large ice wedges, and horizontal ice lenses throughout most of the lower 8 m (26 ft). In 2011, the pay zone thickened to 2.5 m (8.2 ft). The pay gravel (unit 1) is frozen, oxidized, clast supported, subangular pebble-cobble clasts with sporadic boulders. Overlying the pay zone gravel is a 2.5 to 4.5 m (8.2 to 14.8 ft) organic-rich, silt and minor sand layer with an abundance of woody material, logs, and roots. The stratigraphic section, from the mine cut in 2013, consists of frozen, moderately oxidized, clast supported, subangular pebble-cobble clasts; from 0 to 4.0 m (0 and 13 ft) there is an abundance of granules. Loess with minor organics and wood material and an abundance of ice lenses comprises the upper unit between 4 and 10 m (13 and 33 ft).



Aerial view in 2014 of Mr. Smith's operation on upper Black Hills creek.

Bedrock Geology Bedrock exposure varies from decomposed to blocky quartz-muscovite schist.

Gold Characteristics Gold recovered can be both flat and round, usually 12 mesh in size with the rare nugget.

Mr. Smith's wash plant on Black Hills in 2011.

Childs Gulch, a tributary of Black Hills

115O/10 2011: 63°30'28"N, 138°50'40"W

Klippert, K., 2008-2012

Water License: PM08-617 (Active 2019)

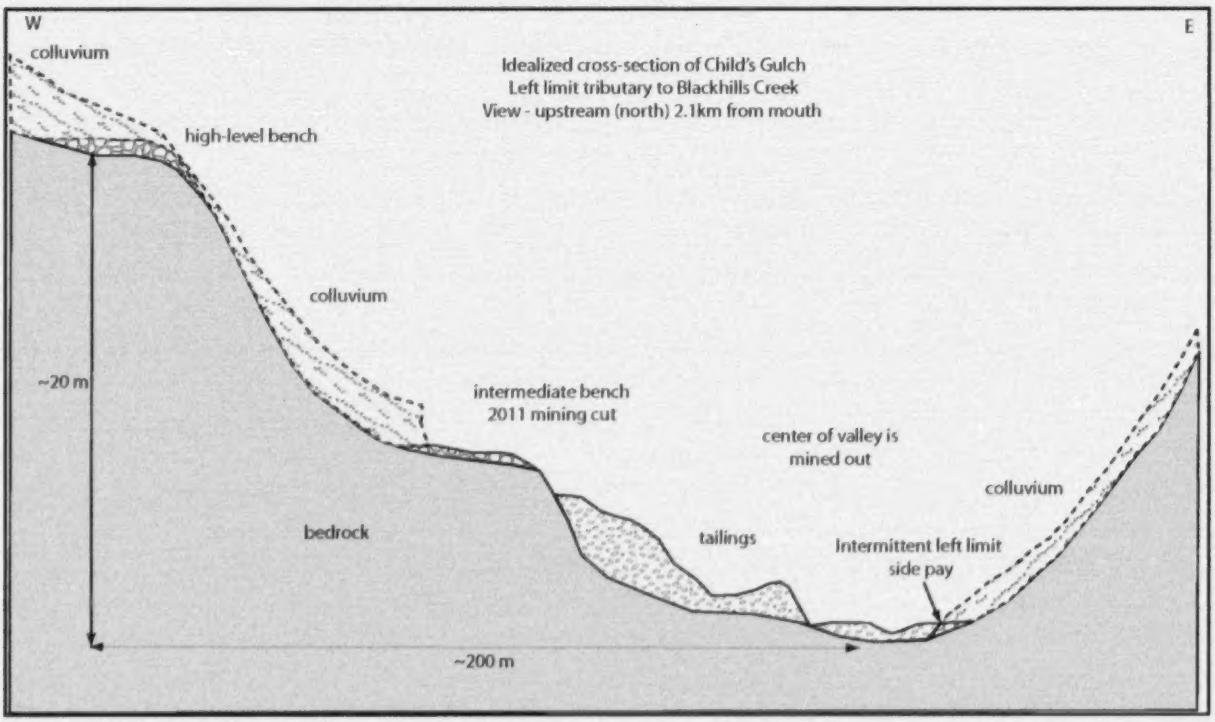
Active Producer (2010-2012) **Operation no. 126**

Location Childs Gulch, 2 km upstream from its confluence with Black Hills Creek.

Work History and Mining Cuts Mr. Klippert worked as a one man operation and mined a narrow, intermediate, right limit bench roughly 7 m (23 ft) above the modern stream in 2011. Mining continued in 2012 and also involved exploration and prospecting at the upper end of the claim block.

Equipment and Water Treatment In 2011, a Hitachi 330 excavator was used to remove overburden, stockpile pay gravel, and feed the plant. A Caterpillar D9L was used to push pay towards the plant while tailings were removed by a Clark 275B loader. Mr. Klippert's plant processed 35 to 45 loose cubic yards (27 to 34 m^3) of gravel per hour and consisted of a 2" upper screen deck, 7/8" bottom screen deck, and one 4 by 8 ft sluice run.

Surficial Geology and Stratigraphy The intermediate level bench has a variable thickness of fluvial sediment



Idealized cross section of Childs Gulch (Source: Jeff Bond).

Mr. Klippert's operation on Childs Gulch in 2011.

which consists of gravel and overbank mud ranging between 1.5 and 5.5 m (4.9 and 18.0 ft) thick. Thickness seems to be controlled by the resistance variations of the bedrock surface. Gravel appears to be eroded in places by colluviation (slide rock processes) resulting in thinner accumulations of gravel in places. Bench gravel and bench landforms are masked or buried by colluvium that is composed of weathered bedrock, loess, and minor bench gravel eroded from a high level bench (approximately 20 m (65 ft) above creek level). Unit 1 on the lower bench section consists of 0.75 m (2.5 ft) of pay which is cobble-pebble fluvial gravel with crude imbrication in the down valley direction. Unit 2, a lower energy fluvial deposit compared to unit 1, extends from 0.75 to 1.3 m (2.5 to 4.3 ft). This unit was deposited in an overbank flood setting and consists of olive grey mud with lenses of gravel, thin sand, and granule lenses up to 20 cm (0.6 ft) thick and 2 m (7 ft) long. Diamicton (slide rock), consisting of 60% cobbles and pebbles and 40% micaceous mud comprise unit 3 at 1.3 to 1.8 m (4.3 to 5.9 ft).

Bedrock Geology Bedrock is quartzite and quartz-muscovite schist (Bostock, 1942).

Gold Characteristics Not reported.

Black Hills, a tributary of Stewart

115O/10 2014: 63°30'21"N, 138°55'40"W
115O/07 2013: 63°29'27"N, 138°51'47"W

Paydirt Holdings Ltd., 1983-1984, 1989-2014

Water License: PM05-505 (Active 2015)
Active Producer (2010-2014) **Operation no. 127**

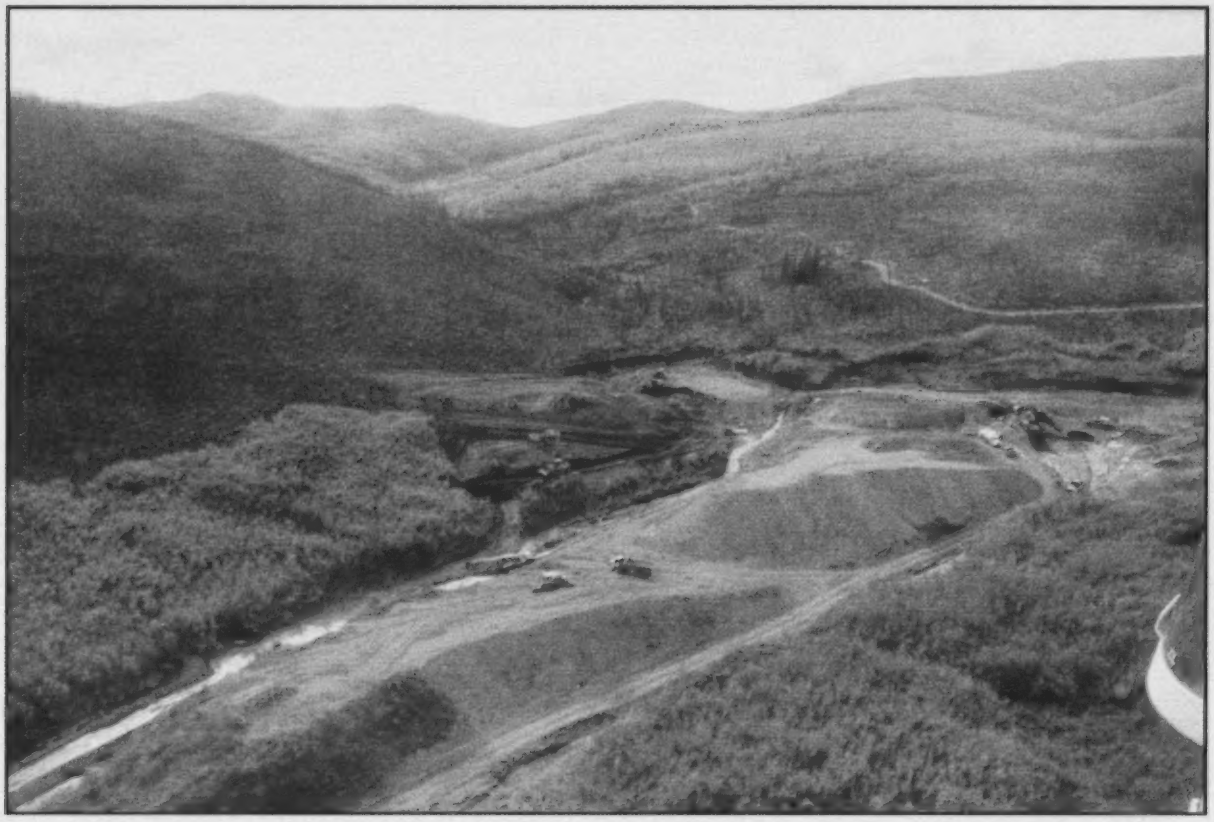
Location Black Hills Creek, mining 3.5 km upstream from the mouth of Childs Gulch.

Work History and Mining Cuts In 2010, Mr. Nixdorf mined a left limit bench slightly upstream from the main camp on Black Hills Creek. Also during 2010, he stripped a cut at the top of the property which was sluiced in 2011. By the end of 2011, mining at the upper end of the claim block had been completed and reclamation was initiated. A cut was mined along the right limit, slightly downstream of Childs Gulch in 2012, while in 2013 a cut at the mouth of Childs Gulch was mined. A right limit cut, 46 by 70 m (151 by 230 ft), at the mouth of Black Hills Creek fork, approximately 3.5 km upstream from Childs Gulch, was mined in 2014. Four miners and one camp personnel operated a daily 12 hour shift.

Mining cut at the mouth of Childs Gulch looking northeast during the 2013 season.

Equipment and Water Treatment Equipment included three Caterpillar D9H bulldozers which were used for stripping the cuts and stockpiling the pay gravel. A Caterpillar 235 excavator fed the sluice plant, and a Caterpillar 980C loader removed tailings. A 6 by 8 ft dump box fed into a 10 ft long Derocker over a 40 ft long sluice run lined with expanded metal riffles and Nomad matting. A Cornell 10" water pump, powered by a Caterpillar 3208 diesel engine, supplied about 2500 igpm of water which was used to process about 100 yd^3 (76 m^3) of gravel per hour. Water was acquired from an in-stream reservoir and effluent was settled in three out-of-stream ponds built from mined out cuts. Clean-ups were done using a jig and by hand panning.

Surficial Geology and Stratigraphy A stratigraphic section at the mouth of Childs Gulch (left limit) was exposed in 2013. The section consists of 0 to 1.75 m (0 to 5.7 ft) of interbedded medium grained sand, granules, and pebble-cobble gravels with minimal boulders. Loess with substantial woody debris and organics composes the upper unit from 1.75 to 7.5 m (5.7 to 24.6 ft). All of the gravel in the left limit



Paydirt Holdings' operation at the forks of Black Hills Creek in 2014.

section was sluiced along with some bedrock. At the forks on the right limit, 0.9 m (3 ft) of boulder-cobble gravel with sandy matrix is overlain by 0.8 m (2.7 ft) of cobble-pebble gravel, moderately sorted, clast supported, medium to coarse sand and grit matrix, with a silty organic lens in the upper 0.3 m (1 ft). Up to 0.9 m (3 ft) of gravel and 0.6 m (2 ft) of bedrock was sluiced.

Bedrock Geology Bedrock varies from decomposed schist to competent block interbedded schist and quartzite.

Gold Characteristics At the forks, gold is fine and flat. Gold recovered from Childs Gulch is coarser.

Dome, a tributary of Black Hills

115O/07 2011: 63°26'47"N, 138°50'29"W

Armstrong, W., 2002-2012

Water License: PM06-512 (Valid 2017)

Active Producer (2010-2012) **Operation no. 128**

Location Dome Creek, at the confluence with Black Hills Creek.

Work History and Mining Cuts Throughout the 2010 season, Mr. Armstrong stripped and sluiced a cut upstream of his 2009 cut. Mining progressed upstream in 2011. The mine cut was located in a narrow section of Dome Creek near the mouth. From the first cut in 2011 Mr. Armstrong sluiced 3500 yd^3 (2676 m^3) in one month. His second cut was located upstream of a knob of resistant bedrock where he had to rip frozen muck overburden from the cut before processing. With continued reclamation he proceeded upstream in an organized fashion throughout the 2012 season. Mr. Armstrong passed away in fall 2012.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Unit 1 consists of 0 to 0.75 m (0 to 2.4 ft) of banded diamicton and weathered bedrock that contains gravel clasts in the upper half. From 0.75 to 3.0 m (2.4 ft to 9.8 ft) the second unit is a cobble gravel with some local angular boulders that consists of 60% clasts and 40% silty sand. Within the silty sand beds, a minor presence of wood fragments and sticks are noted. Unit 3, overlaying the cobble gravel is a poorly exposed muck consisting of organics, and silt between 3.0 to 5.5 m (9.8 to 18.0 ft).

Aerial view of Mr. Armstrong's operation on Dome Creek in 2012 (Photo credit: Jim Leary).

Bedrock Geology Bedrock exposed is schist.

Gold Characteristics Not reported.

McCrimmon, a tributary of Black Hills

115O/07 2009: 63°23'43"N, 138°45'43"W

Hughes, S., 2008-2014

Water License: PM08-624 (Active 2019)
Active Producer (2010-2014) **Operation no. 129**

Location McCrimmon Creek, 0.5 km from its confluence with Black Hills Creek.

Work History and Mining Cuts Mr. Hughes operated a one-man camp with a daily ten hour shift. During 2010, shaft work was done and, in 2011, activity included bulk sampling and testing on both side benches of McCrimmon Creek including stripping of a left limit bench cut. In 2012, the high left limit bench, near the confluence with Black Hills Creek, was stripped and tested. In 2013, Mr. Hughes installed an 8 by 61 m (25 by 200 ft) bedrock drain and prepared a mine cut in the valley bottom approximately 1.2 km (0.75 mi) upstream from the confluence with Black Hills Creek. Mining continued in 2014 upstream from the previous year's cut.

Equipment and Water Treatment In 2013, equipment included a Hitachi 270 excavator used to strip material and move tailings and a Hitachi EX60 to feed the trommel. The wash plant consisted of a 32" diameter, land-based trommel. A 3" gasoline-powered Honda pump supplied enough water for processing 15 loose cubic yards (11 m^3) of gravel per hour. Water was acquired from McCrimmon Creek and settled out-of-stream in a pond measuring 6 by 21 m (20 by 70 ft) before being discharged back into McCrimmon Creek. Clean-ups were done with a long tom.

Surficial Geology and Stratigraphy The stratigraphic section exposed in 2013 consists of 2.4 to 3.7 m (8 to 12 ft) of frozen black muck overlaying a thin layer 0.6 to 2.4 m (2 to 8 ft) of cobble gravel on decomposed bedrock. Sluiced material included 0.9 m (3 ft) of gravel and 0.6 m (2 ft) of bedrock.

Bedrock Geology Bedrock is quartzite and quartz-mica schist (Bostock, 1942).

Gold Characteristics Gold recovered is of various sizes and rough and dull. An oxidized coating is apparent on some grains and cinnabar is associated with some gold.

Black Hills, a tributary of Stewart

115O/07 2014: 63°22'49"N, 138°45'13"W

Stuart Placers, 2009-2014

Water License: PM11-020 (Active 2021)
Active Producer (2011-2014) **Operation no. 130**

Location Black Hills Creek, between Kernine and McCrimmon Creek.

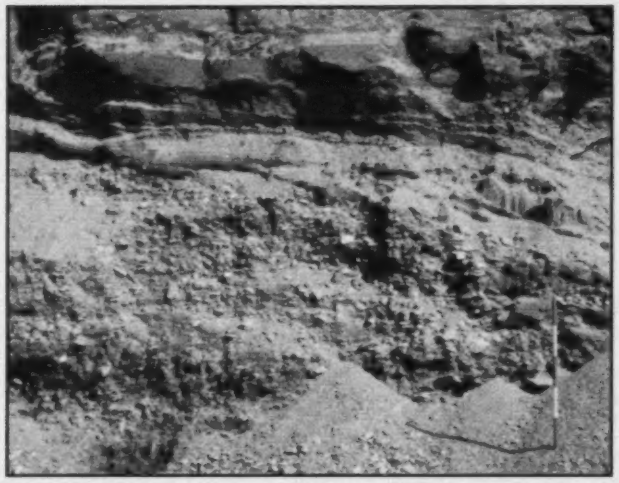
Work History and Mining Cuts Jim and Roger Stuart along with two other miners and one to three camp personnel, worked a daily 13 to 14 hour shift throughout the 2011 to 2013 seasons. In 2011, a right limit test cut that measured 30 by 50 m (98 by 164 ft) was mined downstream of the mouth of Kernine Creek and progressive mining upstream throughout the season occurred. In 2012 and 2013, a large 91 by 305 m (300 by 1000 ft) cut on the left limit of Black Hills Creek was mined. All material was contoured and reclamation occurred on completed cuts as mining continued upstream. A continuation of the 2013 cut was mined in 2014 on the right limit of Black Hills Creek, with a crew of four miners and one camp personnel.

Equipment and Water Treatment In 2014, equipment included a Hitatchi Zaxis 450 excavator, John Deere 450 excavator, Caterpillar D9H and D9G bulldozers, Caterpillar 980 wheel loader, Bell 40 ton articulating haul truck, two International Payhauler 350C haul trucks, and one leased Hitachi EX300 excavator. The wash plant consisted of a 54" trommel with 1" screen leading onto one large sluice run 10 ft long and lined with Nomad matting and 2" hydraulic riffles. Sluice water was supplied at 1500 igpm by a 6 by 8" Monarch pump, powered by a 671 GM engine. In 2011 and 2012, the processing rate was 50 to 70 loose cubic yards (38 to 53 m^3) of gravel an hour, which increased to 60 to 75 loose cubic yards (46 to 57 m^3) gravel per hour in 2013. Water was acquired from Black Hills Creek and effluent settled out-of-stream in a pond with no discharge back to the creek. The top mats were cleaned daily and final concentration was done twice in the season using a single cell jig.

Surficial Geology and Stratigraphy Drilling conducted on the left limit bench confirmed bedrock is present at a depth of 7.3 m (24 ft). The stratigraphy is 1.8 to 4.6 m (6 to 15 ft) of muck overlying gold bearing gravel. The

Aerial view of Mr. Hughes camp at the mouth of McCrimmon Creek.

stratigraphic section, exposed in 2011, consists of 0.75 m (2.5 ft) of a green diamicton pay (unit 1); 50% pebble-cobble-boulder and 50% silty sand. Fluvial clasts appear embedded in weathered bedrock along with vertically oriented clasts, angular local bedrock fragments, and minor boulders. The distinguishing character of the pay unit is its green colour. Unit 2 is 3.75 m (12.3 ft) of gravel with a fining upward texture. The upper 1 m (3.3 ft) consists of stratified, bedded, well sorted sandy pebble gravel with minor beds of grey-brown silty sediment gently dipping eastward. The lower 2 m (6.6 ft) of unit 2 is much coarser and is an oxidized, crudely to moderately stratified, poorly sorted clast supported gravel. These lower beds predominantly dip eastward and the clasts are crudely imbricated to the east/northeast. Gravel in the lower 2 m contains 50% cobbles, 20% pebbles, 20% sand, and 10% silt.



Stuart Placer Ltd. right limit pit from 2011. The section view is looking north up the Black Hills Creek valley. The section exposes the complete stratigraphy consisting of resedimented loess (silt) capping a gravel that increases in coarseness with depth. The main component of the pay is the mixing zone between the weathered green schist bedrock and the lowermost fluvial gravel. Increments on the pogo stick are 25 cm.

Bedrock Geology Bedrock is mostly angular and blocky mafic schist, altered black to green, with minor quartz veins, but varies to decomposed.

Gold Characteristics Gold ranges from flat and flaky to round and nuggety, with a fineness of 790 to 830.

Stuart Placer Ltd left limit operation in 2014 looking upstream on Black Hills Creek.

Black Hills, a tributary of Stewart

115O/07 2014: 63°21'13"N, 138°45'33"W

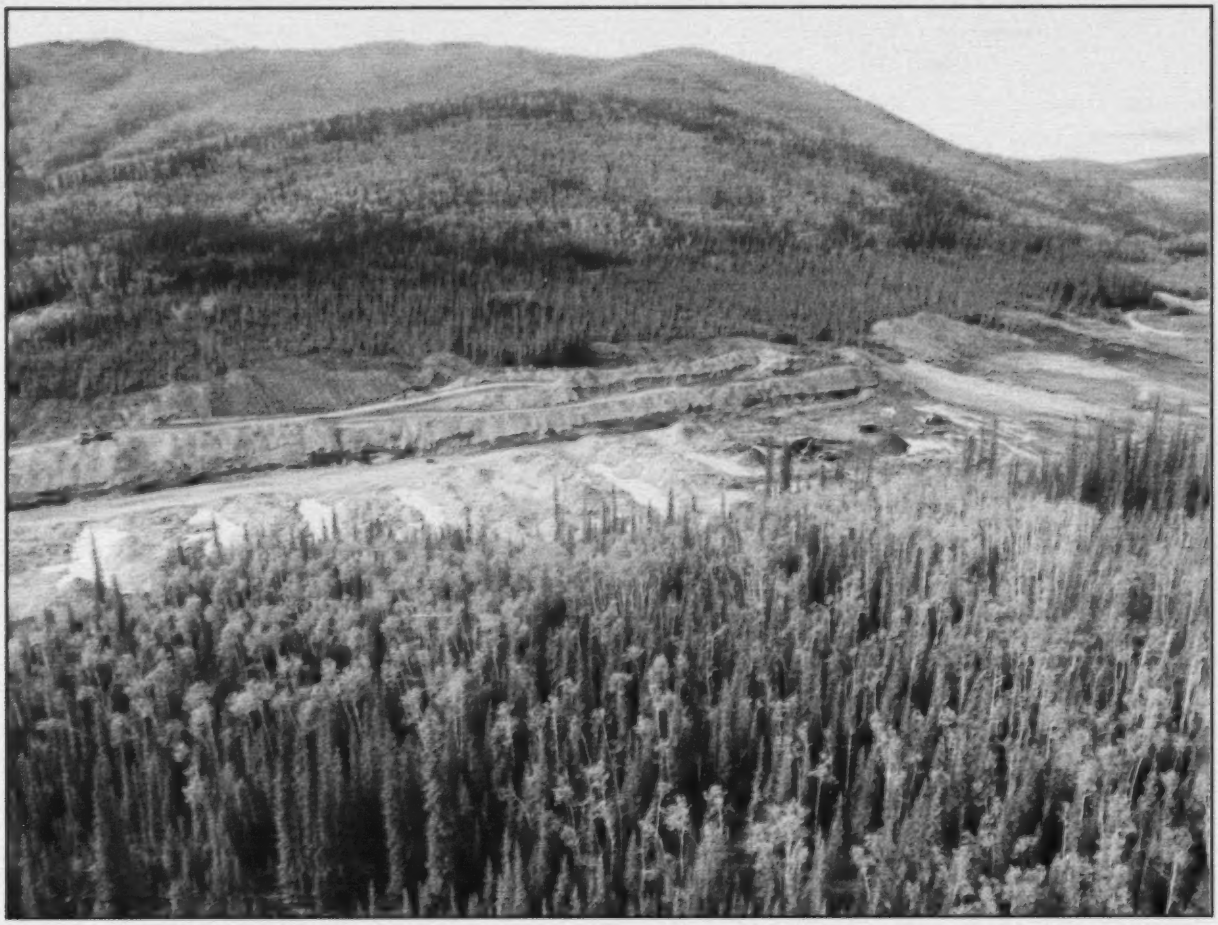
SANDL Mining Ltd., 2009-2014

Water License: PM99-043 (Closed 2010)
Water License: PM11-021 (Active 2021)
Active Producer (2010-2014) **Operation no. 131**

Location Black Hills Creek, approximately 12 km from the confluence with the Stewart River.

Work History and Mining Cuts In 2011, the Hambrook's systematically mined a series of valley-bottom cuts measuring approximately 290 by 85 m (950 by 280 ft) adjacent to Black Hills Creek. In 2012, testing occurred on the high-level right limit bench. Throughout 2011 and 2012, the Hambrook's mined the right limit bench on Black Hills Creek, gradually moving upstream each season. In 2013, a large cut on the left limit of Black Hills Creek was mined and reclamation continued throughout the season. Due to the frozen ground, stripping would occur in approximately two stages in order to expose the pay surface. A crew of four miners operated 24/7 in 2014 and mined a cut 106 by 610 m (350 ft by 2000 ft) on both limits of Black Hills Creek, progressively mining upstream throughout the season.

The Hambrook's operation located along Black Hills Creek on 2011, looking upstream.



Aerial view from 2014 looking northwest over the Hambrook's operation on Black Hills Creek. A right limit bench is visible immediately above the tailings piles on the far side of the valley. This landform was mined further downstream in 2012.

Equipment and Water Treatment Equipment in 2014 included two Hitachi Zaxis 330 excavators, two Hitachi Zaxis 300 excavators, a Komatsu 400 rock truck, and Caterpillar D9 and D10 bulldozers. Two track-mounted New Zealand trommels, one 6 by 20 ft and the other 5 by 15 ft, were both used. The 6 ft trommel had two side runs 8 ft wide and 16 ft long with upper boil boxes and expanded metal and could process 90 to 120 loose cubic yards (70 to 90 m^3) per hour. Water was pumped directly from Black Hills Creek, supplied by a 6 x 8" pump, and effluent was settled in a previously mined cut. Clean-ups were conducted using a long tom and wheel.

Surficial Geology and Stratigraphy With an undulating bedrock contact, the stratigraphy varies with gravel overlain by 3.0 to 4.5 m (10 to 15 ft) of frozen overburden. A section exposed in 2011 consists of 2.1 m (6.9 ft) of fluvial sand and gravel overlying 0.6 m (2.0 ft) of a greenish-grey sandy diamict that is decomposed bedrock. Bedrock varies but in that particular cut consists of 60% clasts and 40% silty sand matrix. Pay is the lower 0.6 m (2 ft) of gravel and another 0.6 m (2 ft) of decomposed greenish bedrock. In the 2014 right limit cut is 0.8 m (2.6 ft) of silty, fine grained sand with cobbles and pebbles, ranging from 40 to 45% clasts. From 0.8 to 1.5 m (2.6 to 4.8 ft) is a pebble-cobble gravel with 2% boulders, 40% cobbles and 58% pebbles. The gravel is clast supported and poorly sorted with a coarse sand and granule matrix. Above 1.5 m (4.8 ft) are old tailings and stripped overburden. In 2014, 0.9 to 1.5 m (3 to 5 ft) of gravel and 0.5 to 0.6 m (1.5 to 2 ft) of bedrock was sluiced.

Bedrock Geology Bedrock is varied between blocky quartzite and mafic-rich green schist with minor quartz-veins containing pyrite.

Gold Characteristics Majority of gold is rounded and well-traveled with a minority component of locally derived angular gold. Fineness is on average 810.

Moosehorn, a tributary of Henderson

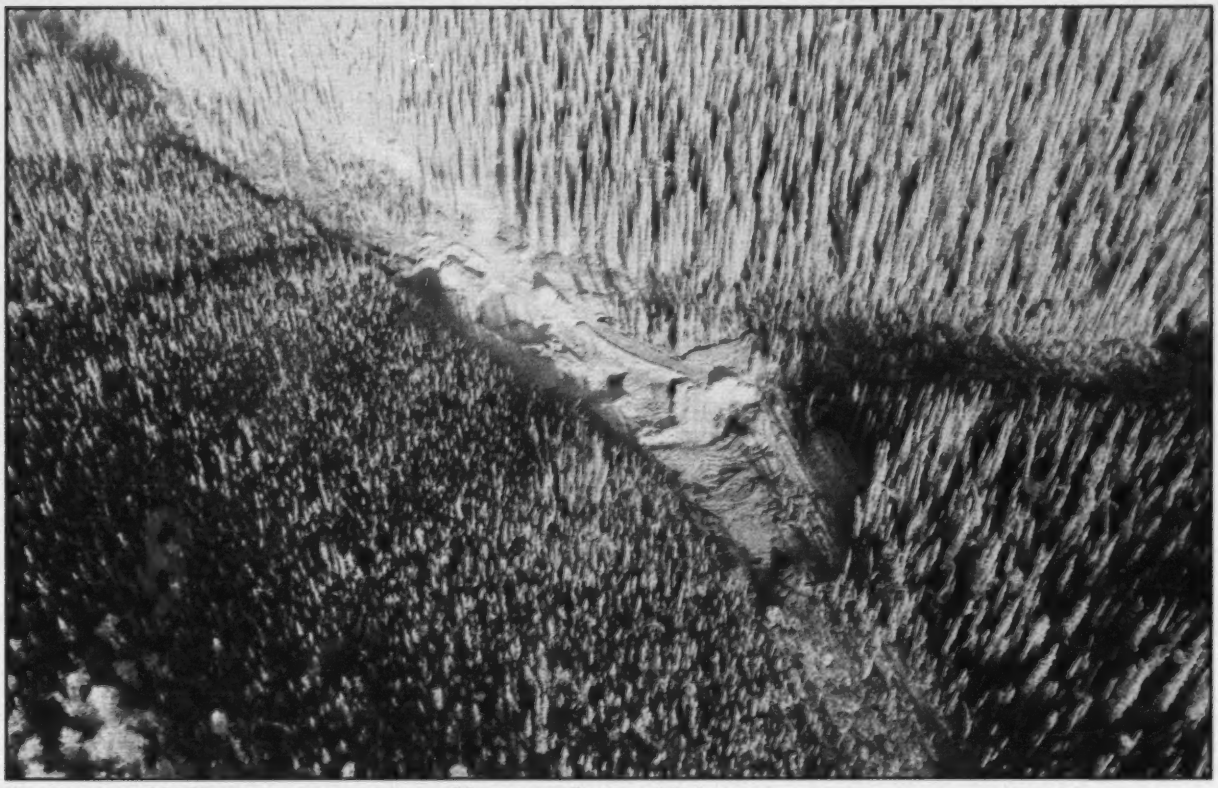
115O/06 2014: 63°22'37"N, 139°10'22"W

Vincent, M., 2008-2014

Water License: PM09-666 (Active 2019)

Active Producer (2010-2014) **Operation no. 132**

Location Moosehorn Creek, 4.0 km upstream from its confluence with Henderson Creek.



Aerial view of Mr. Haines operation on upper Moosehorn Creek in 2014.

Mr. Haines' wash plant in 2012 (Photo credit: Jim Leary).

Work History and Mining Cuts Mr. Vincent is the permit operator and was hand testing in 2008 and stripping late in the fall of 2009. Mr. Haines operated under Mr. Vincent's license from 2011 to 2014 and a small cut mined late in the fall of 2011. Mining and stripping occurred in 2012 with a total of ten days of sluicing in 2013. In 2014, Mr. Haines was focused on the left limit and mined a cut approximately 6 by 15 m (20 by 50 ft).

Equipment and Water Treatment Equipment included a John Deere 690B excavator and a shaker plant able to process 30 loose cubic yards (23 m^3) per hour. Clean-ups were conducted using a shaker table.

Surficial Geology and Stratigraphy The stratigraphic section consists of 1.2 m (4 ft) of gravel overlain by 3.0 m (10 ft) of black muck.

Bedrock Geology Bedrock is mapped as quartzite and quartz-muscovite-schist (Bostock, 1942).

Gold Characteristics Gold is dull, both flat and round, and has a fineness of 780.

Henderson and North Henderson, a tributary of Yukon

115O/06 2014: 63°22'12"N, 139°20'50"W

H.C. Mining Ltd., 2004-2014

Water License: PM08-623 (Active 2019)

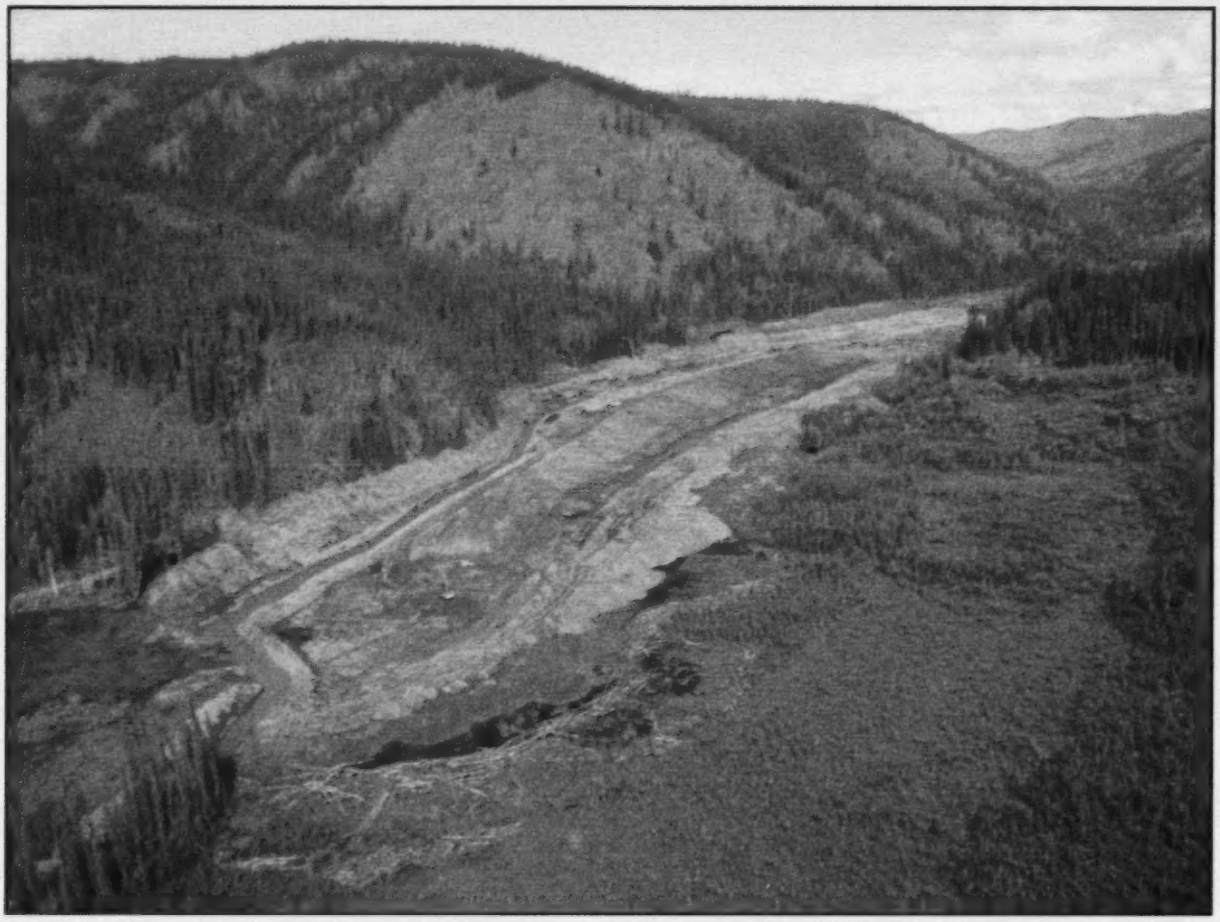
Active Producer (2010-2014) **Operation no. 133**

Location North Henderson Creek, approximately 4 km from the confluence with Henderson Creek; Henderson Creek 5 km from its confluence with Stewart River.

Work History and Mining Cuts The first year mining North Henderson Creek occurred in the 2010 season, with the preliminary cut situated in the narrow canyon just upstream from the mouth. In 2011, stripping and sluicing occurred at the mouth of Emaline Pup on North Henderson Creek and the main camp was moved to a bench above this location. Throughout 2012, stripping progressed near the mouth of North Henderson and mining continued upstream. Emaline Pup side pay was mined in 2013 and once completed, mining continued up the main channel of the Pup. Large areas of reclamation occurred in 2013 on both Henderson Creek and North Henderson Creek. In 2014, a large cut was opened up immediately below the confluence of North Henderson Creek and the main stem of Henderson Creek. Mining also took place on North Henderson Creek just upstream from Emaline Pup. Between four and five miners operated two shifts daily.

Equipment and Water Treatment In 2013, there were: four excavators – two Hitachi Zaxis 350LC, one Hitachi UH143, and one Hitachi EX300; four bulldozers – a Caterpillar D9T, Caterpillar D9L, Komatsu 155, and Komatsu 475 used for stripping and pushing pay; and a 470 backhoe. The wash plant was fed at 200-250 loose cubic yards (153 m^3) of gravel per hour. It included a 10 by 10 ft hopper over a Terex Simplicity 5 by 14 ft double screen deck and an 11 by 7.5 ft primary sluice run followed by two 8 by 14 ft secondary sluice runs with angle iron riffles. Tailings were stacked with a 32" by 50 ft conveyor. Depending on the mining location water was acquired from Henderson and North Henderson creeks and 100% recycled. In addition to the development work in 2014, H.C. Mining conducted exploration auger drilling and geophysical mapping near the mouth of Henderson Creek.

View looking north at H.C. Mining Ltd operation on North Henderson Creek in 2013.



View looking northeast at H.C. Mining Ltd. operation below the confluence between Henderson and North Henderson creeks in 2014.

Surficial Geology and Stratigraphy Undulating bedrock with varied gravel depths exists throughout the 2013 cut along North Henderson Creek. The first unit, 0 to 0.8 m (0 to 2.6 ft), consists of clast supported, imbricated, pebble-cobble gravel with limited boulder-sized clasts. Interbedded gravel, woody debris, and silty sand lenses comprise unit 2 from 0.8 to 2.5 m (2.6 to 8.2 ft). Gravel consists of cobble to boulder sized clasts with pervasive iron oxide staining in isolated pockets. Unit 3 consists of 6 m (20 ft) of overburden. The pay gravel, in the 2014 cut below the confluence of Henderson and North Henderson creeks, consists of a clast-supported, cobble-pebble gravel with silty gravel beds and minor boulders. The matrix or fine component of the gravel has abundant granule material (2–4 mm in size) and generally there is less matrix in the gravel on bedrock. Overall, the gravel directly above bedrock appears to have a higher energy history than the upper components of the pay. Approximately 3 m (10 ft) of gravel is sluiced and 60 cm (2 ft) of bedrock.

Bedrock Geology Bedrock in North Henderson Creek is mapped as an orthogneiss (Bostock, 1942). In the cut below the confluence of North Henderson and Henderson creek (2014) the bedrock consisted of mafic schist that weathers burgundy and contains quartz veins.

Gold Characteristics On North Henderson Creek the gold is described as smooth and rough. In terms of grain size, 10% will sit on a 6 mesh screen (3.3 mm screen) and nuggets up to 1 oz are recovered. The gold fineness on North Henderson Creek is 820 to 840. Below the confluence of North Henderson and Henderson creeks the gold is described as flat and fine with a fineness ranging from 800 to 820.

Henderson, a tributary of Yukon

115O/06 2014: 63°25'55"N, 139°07'23"W

Northern Gold Resources ULC, 2013-2014

Water License: PM12-025 (Active 2022)
Active Producer (2013-2014) **Operation no. 134**

Location Henderson Creek and Russian Creek, upper.

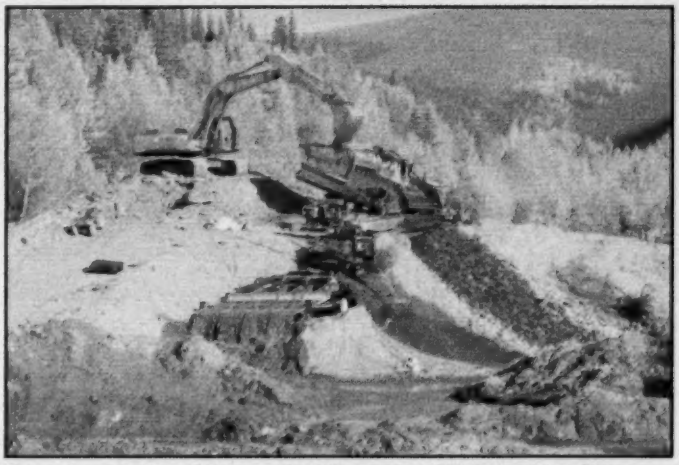
Work History and Mining Cuts In 2013, Northern Gold Resources ULC purchased the ground and conducted test pitting and used a small trommel to determine grades of side pay and tailings on Henderson Creek. A crew of three miners and one camp personnel mined the right limit of Henderson Creek and at the mouth of Russian Gulch in 2014. Tailings, side pay, and virgin ground were all mined on the right limit Henderson in a cut that measured 30 by 45 m (100 by 150 ft).

Equipment and Water Treatment Equipment in 2014 included a Hitachi Zaxis 330 excavator, Caterpillar 988 wheel loaders, Caterpillar 235C excavator, and Caterpillar D8 and D9. A Derocker was used to process up to 40 loose cubic yards (31 m^3) of gravel per hour, with 200 to 300 loose cubic yards (153 to 230 m^3) processed a day. The top sluice run was 3 ft wide by 12 ft long with riffles and expanded metal. This fed a 4 ft wide by 8 ft long screen run and split into four - 4 ft wide by 12 ft long runs with angle iron and expanded metal. Water was supplied by a 10 by 8" pump and 100% recycled in a series of four ponds. A jig was used for clean-ups.

Surficial Geology and Stratigraphy Henderson Creek exposure on the right limit in 2014 consists of 0.4 m (1.3 ft) of clast supported cobble gravel with subrounded clasts and 35% medium-sand and silty matrix. Present between 0.4 to 6.0 m (1.3 to 19.7 ft) is loess with minimal organics. Due to undulating bedrock, gravel depth varies between 0.4 to 1.0 m (1.3 to 3.3 ft). Sluiced material ranges between 1.2 to 1.5 m (4 to 5 ft) of gravel and up to 0.6 m (2 ft) of bedrock. On the right limit bank exposure of Russian Creek, 0.6 m (2 ft) of a high energy boulder-cobble gravel with open work sections is exposed. From 0.6 to 1.1 m (2.0 to 3.6 ft) consists of interbedded fine to medium-grained sand, pebble gravel, and organics. A cobble-pebble gravel with subangular clasts exists from 1.1 to 1.6 m (3.6 to 5.2 ft). Interbedded silt, medium-grained sand, and organic pods is present from 1.6 to 3.0 m (5.2 to 9.8 m).

Bedrock Geology Bedrock is slightly veined, biotite-rich gneiss.

Gold Characteristics Gold is all flat and wiry and the largest is fingernail size.



Derocker used by Northern Gold Resources ULCs in 2014 (Photo credit: Jim Leary).

Northern Gold Resources ULCs' active cut in 2014 on Henderson Creek.

Rosebute, a tributary of Yukon

115O/11 2014: 63°31'10"N, 139°24'48"W

Paycore Enterprises Ltd., 2013-2014

Water License: PM05-475 (Active 2015)

Active Producer (2013-2014) **Operation no. 135**

Location Rosebute Creek, approximately 15 km upstream from its confluence with Yukon River.

Work History and Mining Cuts Paycore Enterprises' first year of activity was in 2013 including an auger drill program with 50 holes on upper Rosebute Creek. In the spring of 2014, five claims were stripped across the valley bottom including the limits. A crew of five miners and one camp personnel operated two daily 12 hour shifts and mined progressively upstream throughout the season.

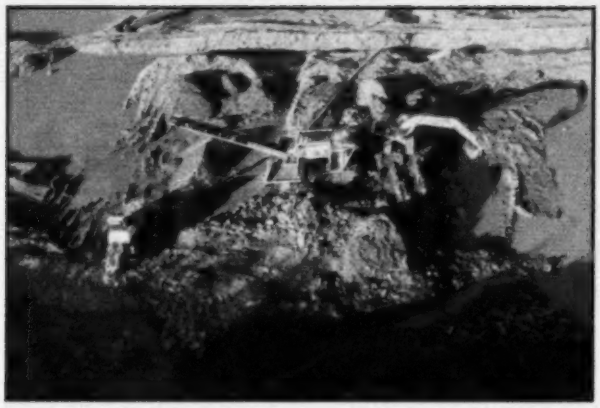
Equipment and Water Treatment Equipment present in 2014 included a Komatsu 490 excavator, Komatsu 375 bulldozer, and custom built vibrating screen deck able to process 300 to 350 loose cubic yards (229 to 267 m^3) per hour. The screen deck, with a 2" upper screen and 1/2" bottom screen and 10 by 10 ft hopper, had a center run 7 ft wide by 12 ft long and two side runs, each 10 ft wide by 14 ft long with angle iron in the top of the run and a combination of angle iron and expanded metal in the lower sections of the runs. All of the runs were lined with Nomad matting. A 12" pump powered by a 350 horsepower engine supplied the water acquired from a reservoir pond and effluent was settled in a series of ponds downstream.

Surficial Geology and Stratigraphy The stratigraphy of the valley bottom sediments consists of loess overlying fluvial gravel. The loess thickness varies and is greatest near the valley margins. The gravel varies from 1.8 to 3 m (6 to 10 ft) in thickness and consists of cobble-boulder gravel on bedrock that fines upward into sorted pebble gravel and cross-bedded sand. All of the gravel section is sluiced including 0.6 m (2 ft) of bedrock. The bedrock surface undulates and can abruptly rise 1 m (3 ft) across the valley bottom.

Bedrock Geology Bedrock varies from blocky grey quartzite to decomposed oxidized schist.

Gold Characteristics Gold is described as 99% flat and hammered. The largest gold grain size is 6 grams. Pay is fairly consistent across the valley bottom and perhaps slightly better on the left limit.

Aerial view in 2014, looking upstream at Paycore Enterprises operation on Rosebute Creek.



Paycore Enterprises sluicing on upper Rosebute Creek in 2014.

Mr. Neudorf's wash plant in 2014, mining under PM10-071.

Maisy May, a tributary of Stewart

115O/06 2014: 63°21'42"N, 139°00'55"W

Christiansen, A., 1993-2014

Water License: PM09-637 (Closed 2010)
Water License: PM09-637A (Active 2020)
Water License: PM10-071 (Active 2021)
Active Producer (2010-2014) **Operation no. 136**

Location Maisy May Creek, near headwaters on an unnamed left limit tributary.

Work History and Mining Cuts From 2010 to 2011, Mr. Christiansen operated on an uppermost left limit tributary of Maisy May and continued mining upstream throughout the seasons under licenses PM09-637A. In 2012 and 2013, Mr. Christiansen moved approximately 3 km downstream to an unnamed left limit tributary, operating under water licenses PM10-071. Mr. Christiansen mined upper Maisey May under PM09-637A in 2014 and Mr. Neudorf mined under PM10-071 downstream up a left limit tributary to Maisey May in both 2013 and 2014.

Equipment and Water Treatment Equipment at Mr. Neudorf's operation included a Caterpillar 345C excavator, Hiatachi 270 excavator, Caterpillar B400 rock truck, and a vibrating screen deck with 8 ft wide by 12 ft long sluice run, lined with expanded metal and unbacked nomad, able to process 70 loose cubic yards (53 m^3) per hour.

Surficial Geology and Stratigraphy Overburden thickness on average is 1.8 m (6 ft) and it overlies 2.4 to 3.6 m (8 to 12 ft) of gravel. All gravel and from 0.9 to 1.2 m (3 to 4 ft) of bedrock is sluiced.

Bedrock Geology Bedrock varies from decomposed to competent schist.

A view looking downstream on Mr. Christiansen's operation on upper Maisey May Creek in 2014.

Gold Characteristics Gold is all fine with a fineness of 750 to 760. Gold recovered from the unknown left limit tributary is coarser.

Maisy May, a tributary of Stewart

115O/07 2014: 63°16'58"N, 138°54'22"W

Bedrock Mining Company Inc., 2013-2014

Water License: PM10-022 (Closed 2013)
Water License: PM13-052 (Active 2024)
Active Producer (2013-2014) **Operation no. 137**

Location Maisy May Creek, lower, approximately 7 km upstream from its confluence with Stewart River.

Work History and Mining Cuts The operation was acquired from 40419 Yukon Inc. in 2013. Activity focused on completing test mining and developing the operation under 40419 Yukon Inc.'s previous license. Mr. Friesen and two other miners worked a daily 11 hour shift throughout 2013. They dug test holes to a depth of 3.6 to 4.5 m (12 to 15 ft) and stripped ground. The first year of sluicing occurred in 2014. The daily operation was an 11 to 12 hour shift with six miners and one camp personnel. Mining occurred on the right limit and middle of the valley throughout 2014.

Equipment and Water Treatment In 2014, equipment included a Caterpillar 345 excavator, Caterpillar 330 excavator, Caterpillar 988 loader, Caterpillar D10N and D8R bulldozers, and two Caterpillar 730 articulated dump trucks. The wash plant consisted of a 6 ft T-600 trommel able to process 180 to 200 loose cubic yards (138 to 153 m^3) of gravel per hour. A small trommel was used for clean ups.

Surficial Geology and Stratigraphy The right limit exposure in the 2014 cut consists of 0.7 m (2.5 ft) of pebble-cobble-boulder gravel with medium to coarse grained, sandy matrix on bedrock. A well sorted, compact, moderately oxidized, pebble gravel is present from 0.76 to 0.86 m (2.5 to 2.8 ft) overlain by an undulating silty-organic lens with woody fragments and pebbles from 0.86 to 1.0 m (2.8 to 3.3 ft). Pebble gravel is present 1.0 to 1.6 m (3.3 to 5.2 ft) and is imbricated down-valley, well sorted, and pervasively oxidized with 5% cobbles and 65% pebbles. On average, 3 m (10 ft) of overburden was stripped. Sluiced material consists of 1.5 to 1.8 m (5 to 6 ft) of gravel and 0.3 to 0.6 m (1 to 2 ft) of bedrock.

Bedrock Mining Company Inc.'s cut in 2014 on Maisey May Creek.

Bedrock Geology Bedrock is highly fractured to decomposed quartz-mica schist.

Gold Characteristics Gold is chunkier on the left limit, flat on the right limit, and has a fineness of 790.

Barker, a tributary of Stewart

115O/02 2013: 63°07'03"N, 138°56'24"W

Midas Rex Mining Inc., 2004-2014

Water License: PM06-523 (Active 2016)
Active Producer (2010-2014) **Operation no. 138**

Location Barker Creek, approximately 7 km upstream from its confluence with Stewart River.

Work History and Mining Cuts In 2010, the mine cuts measured 124 490 m^2 (1,340,000 ft^2) and decreased in 2011 to 58 993 m^2 (635,000 ft^2). In 2012, production rebounded with cuts measuring 63 174 m^2 (680,000 ft^2). The majority of the mining occurred near the streambed and at the base of a terrace. Due to the slow thaw in 2013, a significant amount of ripping was required to expose the cuts. Stripping, in 2014, occurred between Dixie and Iron Creek and amounted to approximately 130 by 800 m (426 by 2,624 ft).

Sluicing at the Midas Rex Mining Inc. operation on Barker Creek (Photo credit: Stuart Schmidt).

Equipment and Water Treatment Equipment on site included two Caterpillar D10N bulldozers, one Hitachi 700 excavator, and one Caterpillar 345 excavator. The wash plant comprised a 6 by 20 ft El Russ screen deck with a 20 ft total sluice run width and was capable of processing 200 loose cubic yards (152 m^3) per hour.

Surficial Geology and Stratigraphy On average, the stratigraphic section consists of 1.2 m (4.0 ft) of pay gravel on bedrock, overlain by 3.0 to 4.5 m (10 to 15 ft) of overburden.

Bedrock Geology Bedrock is quartzite and quartz-mica schist (Bostock, 1942).

Gold Characteristics Gold recovered is very coarse and has a fineness of 860.

Thistle, a tributary of Yukon

115O/03 2014: 63°03'53"N, 139°25'39"W

Schmidt, S., 1993-2014

Water License: PM06-513 (Expired 2012)
Water License: PM11-053 (Active 2022)
Active Producer (2010-2014) **Operation no. 139**

Location Thistle Creek, lower, at the mouth of Green Gulch

Work History and Mining Cuts In the fall of 2011, a bench downstream of Blueberry Creek was stripped while in 2012 stripping occurred near Green Gulch and work also included maintenance on settling ponds. Stripping continued in 2013 on the left limit bank of Thistle and in the valley bottom downstream of the airstrip. Mining was reinitiated in 2014 with six miners and one camp personnel focused on the left limit of Thistle Creek about 3 km from the confluence with Yukon River. The 2014 left limit cut measured approximately 1100 m (3600 ft) long and varied in width from 36 to 90 m (120 to 300 ft).

Equipment and Water Treatment Equipment used in 2014 included two Caterpillar D10N bulldozers, a Hitachi 700 excavator, Caterpillar 345 excavator, Caterpillar A40F rock truck, and Caterpillar 740 rock truck. The double screen deck is able to process 200 to 230 loose cubic yards (153 to 176 m^3) an hour, with two middle iron angle runs 3 ft wide by 6 ft long and four side runs 4 ft wide by 14 ft long consisting of a mix of angle iron, slick plate, and expanded metal.

A view looking downstream of Mr. Schmidt's mining operation on the left limit of Thistle Creek in 2014.

A left limit bank exposure on Mr. Schmidt's Thistle Creek mine operation. Note the abundance of clasts versus matrix in the gravel. This suggests a relatively high energy stream flow was the depositional environment.

Surficial Geology and Stratigraphy The stratigraphy consists of fluvial gravel buried by resedimented loess and weathered bedrock colluvium. The fluvial pay gravel is a clast-supported, pebble-cobble gravel with minor boulders and a sand matrix. The clasts make up approximately 75% and the sand matrix accounts for the remaining 25%. Bedrock surface undulations up to 3 m (10 ft) were observed as mining progressed closer to the hill side.

Bedrock Geology Bedrock is quartzite and quartz-mica schist.

Gold Characteristics The fineness of the gold varies between 820 and 860.

Lulu, a tributary of Thistle

115O/03 2008: 63°03'06"N, 139°11'09"W

Sager, M. and R., 2000-2009, 2011

Water License: PM07-583 (Active 2018)
Active Producer (2011) **Operation no. 140**

Location Lulu Gulch.

Work History and Mining Cuts Limited activity occurred on site; in 2011 mechanical stripping was noted. During the 2011 season, the Sager family primarily mined an unnamed right-limit tributary of Thistle Creek under PM05-470. In 2013, the Sager's mined Kirkman Creek and left Lulu in stable condition and temporarily inactive.

Equipment and Water Treatment Past equipment included two Caterpillar bulldozers for stripping and pushing pay, and a Volvo excavator for feeding the wash plant.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite and quartz-mica schist (Bostock, 1942).

Gold Characteristics Not reported.

Unnamed, a tributary of Thistle

115O/03 2014: 63°05'12"N, 139°08'19"W

Walsh, P. (Licensee); Sager, M. and R. (Operator), 2000-2008, 2010-2011, 2014

Water License: PM05-470 (Active 2014)
Active Producer (2010-2011, 2014) **Operation no. 141**

Location Unnamed right limit tributary, upper Thistle Creek.

Work History and Mining Cuts In 2010 and 2011, mining occurred along the upper portion of the creek. No mining activity occurred in 2012 or 2013. Mr. Sager mined the unnamed tributary in 2014 with two miners on both limits.

Equipment and Water Treatment Equipment in 2014 included two Volvo 210 excavators, a John Deere 450 excavator, and Caterpillar D8K bulldozer.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite and quartz-mica schist (Bostock, 1942).

Gold Characteristics Not reported.

KIRKMAN, A TRIBUTARY OF YUKON

115O/03 2014: 63°0'46"N, 139°20'05"W

Sager, M. and R., 2011, 2013-2014

Water License: PM10-015 (Active 2020)

Active Producer (2011, 2013-2014) **Operation no. 142**

LOCATION Kirkman Creek, lower, 4.5 km upstream from its confluence with Yukon River.

WORK HISTORY AND MINING CUTS There was no recorded activity on lower Kirkman Creek under PM10-015 in 2010 and 2012. Mining occurred during the 2011 season although no specific information is noted. Sluicing and stripping occurred in 2013 progressing in an upstream direction. In 2014, four miners and two camp personnel mined a cut in the middle of the valley. A typical cut area in 2014 measured 50 by 120 m (160 by 390 ft). Kirkman Creek occupies a stable channel on the left limit of the valley through the recently mined areas.

EQUIPMENT AND WATER TREATMENT The equipment used in the 2014 season included a Hitachi Zaxis 450 LC excavator for removing pay, two Volvo 35 ton rock trucks for transporting pay, a Volvo 210 excavator for feeding the plant, and two Fiat bulldozers, FD40 and HD31. The plant consisted of a hopper, a double vibrating screen deck that classified to 1¼" and two sluice runs containing a nugget trap, angle iron riffles and expanded metal able to process 150 to 180 loose cubic yards (115 to 138 m^3) an hour. Water used for mining is derived from ground water

The Sager's mining operation on Kirkman Creek in 2014.

View looking west (downstream) of the Sager operation on Kirkman Creek in 2014.

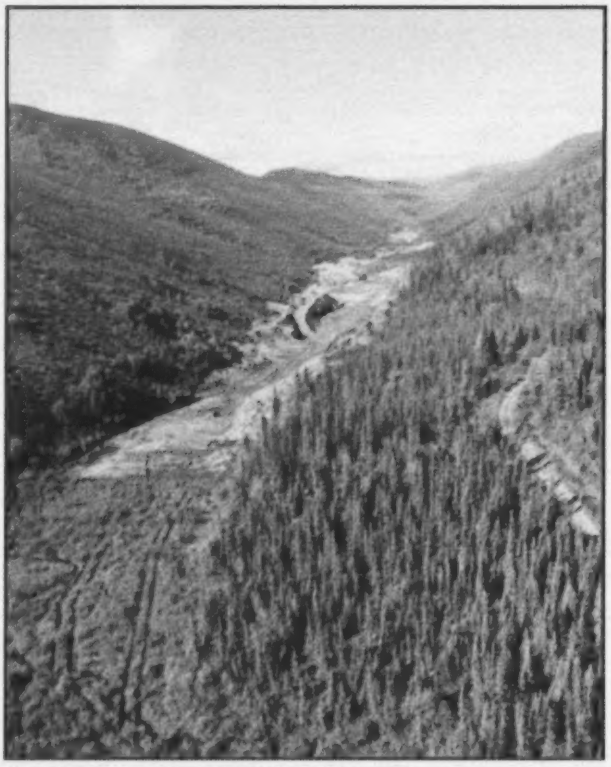
seepage entering the cut area. The groundwater flows into a large storage pond contained in a previously mined area downstream. The storage pond also doubles as the settling pond and the only discharge into Kirkman Creek occurs through the subsurface. This method of water storage and recycling for the wash plant results in zero sediment discharge into Kirkman Creek.

Surficial Geology and Stratigraphy The valley bottom surficial units at the Sager's mine have relatively shallow thicknesses. Approximately 1.5 to 2 m (4.9 to 6.6 ft) of muck overburden has been stripped exposing 2 m (6.5 ft) of gravel on bedrock. The bedrock surface undulates or rolls creating natural riffles and reduces the gravel thickness on bedrock highs. The gravel unit contains bands of oxidation, is poorly sorted, and dominated by cobble-size clasts. The lower 60 cm (2 ft) of the gravel and 0.9 to 2 m (3 to 7 ft) of bedrock is sluiced.

Bedrock Geology Bedrock is grey schist with quartz veins and fault zones crosscutting the valley.

Exploration Potential Both left limit and right limit benches are present near the Sager's mine. The right limit bench is fairly continuous and is south-facing so there should be less permafrost present.

Gold Characteristics The characteristics of the gold vary across the valley. On the left limit, there is less coarse gold and the fineness is 840. On the right limit, the gold is coarser with a typical size of 4 mesh (0.64 cm) and nuggets up to 1 oz. The fineness of the right limit gold is 850.



View looking west at Fell Hawk Placers operation on upper Kirkman Creek in 2014.

Kirkman, a tributary of Yukon

115O/03 2014: 63°00'04"N, 139°13'02"W

Fell-Hawk Placers, 1990-1992, 1998-1999, 2003-2010, 2013-2014

Water License: PM09-630 (Active 2019)
Active Producer (2010, 2013-2014) **Operation no. 143**

Location Kirkman Creek, upper, 1.2 km downstream from the forks.

Work History and Mining Cuts Fell Hawk Placers spent the majority of 2010 to 2013 at their Ballarat Creek operation. Recorded data displays activity on Kirkman Creek in 2010 where they mined upstream and moved to Ballarat mid-to-end of the season. The beginning of 2013 was spent on Ballarat Creek; they returned to Kirkman at the end of the season to commence with stripping. In 2014, mining focused on a cut extending up the center of Kirkman Creek valley that measured 32 by 200 m (105 by 650 ft). In addition, a right limit cut was opened farther downstream that measured 30 by 160 m (100 by 525 ft). A crew of five or six miners and two camp personnel operated throughout 2014.

Equipment and Water Treatment Equipment used at the lower cut in 2014 included a John Deere 450D excavator for stripping overburden and two Caterpillar D300E rock trucks for hauling waste material. At the upper cut, Fell-Hawk Placers were using a Hitachi Zaxis 330 for feeding the plant, Caterpillar D8L and D9L dozers for pushing tailings, and a Hitachi Zaxis 450 excavator for stripping. A Caterpillar D7 was used to relocate the wash plant and pump. The wash plant consisted of a trailer mounted screen deck with an 8 by 10 ft hopper and a 30 foot tailings stacker. Sluice runs consisted of a 4 ft wide by 6 ft long initial run with expanded metal and angle iron which fed two 4 ft wide by 12 ft long runs with a mix of expanded metal and angle iron, all nomad lined, with a nugget trap at the bottom.

Surficial Geology and Stratigraphy The 2014 upstream cut on the right limit is comprised of four units. Unit 1, from 0 to 1 m (3 ft) at the base of the section, consists of decomposed schist mixed with coarse fluvial clasts. Unit 2 consists of 3.5 m (11 ft) of poorly sorted pebble-cobble

gravel with minor boulders. This unit is oxidized, contains some silt and sand lenses, and generally consists of 70% clasts and 30% sand. The lower parts of this unit and the decomposed bedrock are considered pay. Unit 3 is 1 m (3 ft) of cobble gravel containing 90% clasts. Unit 4 has been stripped and is presumably a muck overburden. Overall the fluvial gravel deposits indicate a high energy flow in the Kirkman Creek valley, perhaps deposited during flood events. This is potentially supported by Kirkman Creek gravel deposited across the full width of the valley floor. This widespread deposition suggests the flow was capable of eroding the constant influx of fine-grained material off the hill slopes. As the region became more arid and the stream flow decreased, the valley margins were buried by muck and weathered bedrock colluvium.

Bedrock Geology Bedrock is a quartz mica schist and quartzite.

Gold Characteristics Gold is mostly coarse and has rough or pristine edges. The fineness is 865.

Scroggie, a tributary of Stewart

115J/15 2013: 62°58'05"N, 138°31'03"W

Bidrman, Z., 1989-2014

Water License: PM04-360 (Active 2015)
Active Producer (2010-2014) **Operation no. 144**

Location Scroggie Creek, 3.5 km upstream of the confluence with Mariposa Creek.

Work History and Mining Cuts In 2010, mining was focused at a large cut located close to camp at the mouth of Mariposa Creek. Stripping also occurred in the 2010 season. Minimal information is documented for 2011 and 2012 aside from sluicing. Two operators mined under PM04-360 in 2013. The first operator focused on upper Mariposa Creek where four miners diverted the stream to the right limit of the valley, ramped up material on the left limit to create a workable area, and used a series of ponds to settle the effluent. The second operation included Mr. Bidrman and two other personnel; they mined upper Scroggie Creek, upstream of the camp located at the mouth of Mariposa Creek. In 2014, mining focused on upper Scroggie Creek where four miners worked a single shift daily.

The right limit lower cut at Fell Hawk Placers operation on upper Kirkman Creek in 2014. The cut has been stripped down to the pay layer at the left end of the cut. The overburden thickens from 4 to 10 m (13 to 32 ft) as stripping progressed towards the hillside.

Equipment and Water Treatment Equipment in 2013 included a John Deere 330LC excavator, Komatsu 400 excavator, Komatsu WA500 wheel loader and a Komatsu 375 bulldozer. The wash plant consisted of a single screen deck with 1" bars and a 4 ft wide by 16 ft long sluice run with expanded metal that splits into three 10 ft long runs (two 3 ft wide and one 4 ft wide) of expanded metal and angle iron, all nomad lined. A 10" pump supplied enough water to process 120 loose cubic yards (92 m^3) of gravel per hour.

Surficial Geology and Stratigraphy In 2014, Mr. Bidrman's mine was situated on upper Scroggie Creek. The stratigraphy on the right-limit bank consists of four units as is illustrated in the photograph. Unit 1 is a decomposed gneiss or metamorphosed igneous rock. It forms a soft, erodible contact at the base of the section. Unit 2 is a discontinuous 0.8 m (2.6 ft) mixing zone between the weathered bedrock and the fluvial gravel. This unit is predominantly sandy weathered bedrock material however it contains approximately 20% fluvial clasts. Unit 3 from 0.8 to 3.3 m (2.6 to 10.6 ft) is a poorly sorted pebble-cobble gravel with zones of pronounced oxidation. This unit has an erosive lower contact and in places has completely eroded through unit 2. Organic rich silts with wood and sand beds are common near the top of the unit 3. Unit 4 from 3.3 to 3.9 m (10.6 to 12.8 ft) consists of fine grained sand and silt deposited on the floodplain margins during flood events.

Based on the texture, lack of sorting, and the nature of the unit contacts this stratigraphy suggests a high energy flood history for upper Scroggie Creek. The placer gold is primarily distributed within the mixing zone (unit 2) between the weathered bedrock and the high-energy fluvial deposits. Depending on the erosive nature of the flood, all or some of the pre-existing placer gold may be reworked into unit 3. Up to 0.9 m (3 ft) of the bedrock and 0.3 to 0.6 m (1 to 2 ft) of gravel is sluiced.

Bedrock Geology Bedrock is a gneiss containing quartz veins.

Gold Characteristics Gold is coarse with 40% of grains being pea-sized or larger and has a fineness of 900.

The right limit section at Mr. Bidrman's operation on upper Scroggie Creek in 2014. The pick used for scale is 0.6 m (2 ft) long.

View looking west at Mr. Bidrman's operation on upper Scroggie Creek in 2014.

Sparkling, a tributary of Yukon

115J/14 2014: 62°57'26"N, 139°09'03"W

Fischer, W. and B., 2007-2014

Water License: PM05-493 (Active 2016)
Active Producer (2010-2014) **Operation no. 145**

Location Sparkling Creek, 4 km from its confluence with Yukon River.

Work History and Mining Cuts Mr. Fisher conducted test pitting along the entire property to determine grades and potential targets. In 2013, mining continued 4 km upstream from the confluence with Yukon River, where tailings were pushed to the valley walls. Sluicing occurred throughout 2014 with no other information recorded.

Equipment and Water Treatment Equipment included a Caterpillar 235 excavator, Komatsu WA 450 loader, and Caterpillar D9G dozer with a S blade and double ripper. Two screen decks were present, a vibrating screen deck used as a test plant, and another able to process 20 loose cubic yards (15 m^3) per hour.

Surficial Geology and Stratigraphy Sparkling Creek depth to bedrock varies from 7.6 to 8.5 m (25 to 28 ft). Gold grade of sluiced material averages $28.85 per cubic yard, at $1000 per ounce gold price.

Bedrock Geology Bedrock is blocky to decomposed schist.

Gold Characteristics Gold is primarily nuggets with the largest up to 3 ounces and minimal fine gold. Fineness is 880.

Ballarat, a tributary of Yukon

115J/14 2014: 62°56'59"N, 139°0'57"W

Weber, B., 2008-2014

Water License: PM06-514 (Expired 2011)
Water License: PM11-055 (Active 2022)
Active Producer (2010-2014) **Operation no. 146**

Location Ballarat Creek, approximately 8.3 km upstream from its confluence with Yukon River.

Work History and Mining Cuts Throughout the 2010 season, Mr. Weber operated along the right limit of the valley following an old cut. A settling pond abuts the bottom of the cut and as the operator moved upstream the settling pond lengthened. Minimal information is documented during the 2011 and 2012 seasons. In 2013, sluicing occurred on the right limit of the valley and continued throughout 2014.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is amphibolite, mica schist, and phyllite (GSC, Map16-1973).

Gold Characteristics Not reported.

Ballarat, a tributary of Yukon

115J/14 2013: 62°57'47"N, 139°02'40"W

Fellers, J., 2008-2013

Water License: PM03-340 (Active 2014)
Active Producer (2010-2013) **Operation no. 147**

Location Ballarat Creek, roughly 10 km upstream from its confluence with Yukon River.

Mr. Weber's operation on Ballart Creek (Photo credit: Lee Mierau).

Work History and Mining Cuts Activity in 2010 included mining disturbed ground from the 1950s and 1960s and conducting exploration trenching. The large cut mined in 2011 was reclaimed in 2012, with mining activity decreasing and final reclamation becoming the focus in 2013, prior to the license expiration in spring 2014.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is orthogneiss (Tempelman-Kluit, 1974a).

Gold Characteristics Not reported.

Frisco, a tributary of Yukon

115O/03 2014: 63°12'13"N, 139°28'37"W

New Age Drilling and Mining, 2012-2014

Water License: PM10-043 (Active 2020)
Active Producer (2012-2014) **Operation no. 148**

Location Frisco Creek, 3.8 km upstream from its confluence with Yukon River.

Work History and Mining Cuts In 2014, three miners worked a 12 hour shift daily. Mining was concentrated on the middle of the valley and along the left-limit. Mining progressed by stripping overburden onto the base of the right limit hillside. A 20 to 30 m (65 to 100 ft) wide strip was mined starting on the left limit for a total of 8,000 loose cubic yards (6116 m^3) sluiced.

Equipment and Water Treatment A Komatsu PC 150 excavator has been used to strip overburden, dig pay, construct channels, and feed the plant. A Case 721F loader was used for hauling pay and removing tailings. The plant consists of a hopper that feeds a vibrating screen deck. The minus 1" material is sluiced through a boil box and two 3 by 10 ft sluice runs. The sluice runs contain angle iron, expanded metal and nomad matting. Oversized material is stacked using a 24 ft conveyor. The plant processes 25 yd per hour and uses 800 gallons per minute for washing. The entire unit is electrically powered using a Perkins generator. Settling occurs out of stream.

Surficial Geology and Stratigraphy The stratigraphy consists of approximately 2 m (6 ft) of peat and silt overlying 2 to 4 m (6.5 to 13.1 ft) of gravel. In the middle of the valley, the gravel is a well-sorted, imbricated, pebble-cobble gravel. On the left limit, there is coarse slide rock entering

the stream and the gravel is composed of numerous angular cobbles and boulders. The bottom 1 m (3 ft) of gravel plus approximately 1 m (3 ft) of bedrock is sluiced. The majority of the gold is on or in bedrock.

Bedrock Geology Bedrock is a blocky weathering quartz-mica schist.

Gold Characteristics The placer gold is generally coarse and ranges from 3 mm to 2 cm in size. The shape of the gold varies from pristine and angular to reshaped with rounded edges. The gold fineness is 880. According to Mr. Young of New Age Drilling and Mining the gold grades range from 1.8 to 4.2 grams per yard with the better grades occurring on the left limit or south side of the valley.

A left limit exposure on Frisco Creek shows mixing between coarse angular slide rock and fluvial gravel. Blocky-weathering quartz-mica schist is exposed in the bottom of the cut and makes an excellent trap for the placer gold.

A view down valley of New Age Drilling and Mining's operation on Frisco Creek.

Frisco, a tributary of Yukon

115O/03 2014: 63°12'19"N, 139°29'36"W

Stretch, E., 2010-2014

Water License: PM10-043 (Active 2020)

Active Producer (2010-2014) **Operation no. 149**

Location Frisco Creek, 2.5 km upstream from its confluence with Yukon River.

Work History and Mining Cuts A cut was mined in 2010 and minimal activity occurred on upper Frisco in 2011. Mining continued in 2012 through to 2014 but no specific details are reported.

Equipment and Water Treatment Equipment in 2014 included a Komatsu PC 150 excavator, John Deere ZTC 27 mini excavator, Komatsu WA 30 wheel loader, and screen deck able to process 20 loose cubic yards (15 m^3) an hour. Water is acquired from Frisco Creek and supplied by a 4" pump.

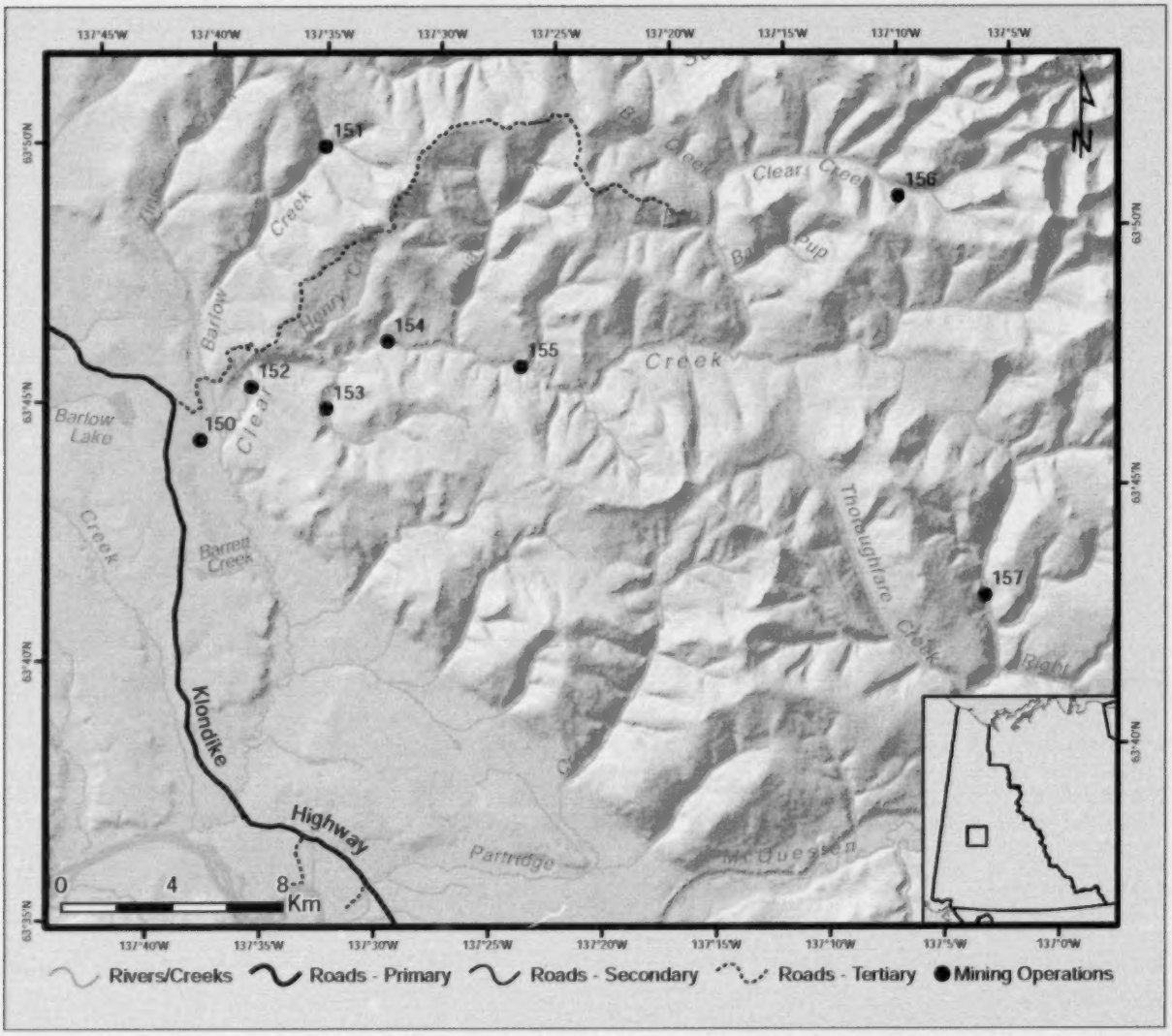
Surficial Geology and Stratigraphy Depth to bedrock is shallow at approximately 3 m (10 ft). The gravel unit (pay) on bedrock is 0.6 to 1.8 m (2 to 6 ft) thick and is overlain by 0.6 m (2 ft) of silt and 0.6 m (2 ft) of organics. Sluiced material included 0.6 m (2 ft) of gravel and 0.3 m (1 ft) of bedrock.

Bedrock Geology Bedrock is quartz-mica schist.

Gold Characteristics Gold is mostly coarse with lots of nuggets, and has a fineness of 880.

SOUTH MCQUESTEN
PLACER AREA

SITES 150 - 157



LEGEND

150 ..... Wolf Head Discovery and Mining
151 ..... Caw Mining and Exploration Ltd.
152 ..... Wasylenko, W.
153 ..... Hollingsworth, M.
154 ..... Kosuta, D.
155 ..... Scott, J.
156 ..... Blackstone Placer Mining Ltd.
157 ..... Pratt, K.

CLEAR, A TRIBUTARY OF STEWART

115P/12 2014: 63°44'30"N, 137°39'16"W

Wolf Head Discovery and Mining, 2014

Water License: PM14-009 (Active 2024)
Active Producer (2014) **Operation no. 150**

LOCATION Clear Creek, right limit bench (Big Alex bench) downstream from Barlow Creek.

WORK HISTORY AND MINING CUTS Wolf Head Discovery and Mining established a new mine site at this location in 2014. Work primarily consisted of land clearing, building an intake and water line from Clear Creek to the bench and constructing the wash plant. Bulk samples were sluiced from a selection of targets on the bench.

EQUIPMENT AND WATER TREATMENT Equipment on site includes a Caterpillar 336E excavator with a 3½ yd bucket for digging pay, a Caterpillar 966E loader with a 6 yd bucket for feeding the hopper, and a Caterpillar D6K bulldozer for building roads and preparing ground. The wash plant has an Elrus hopper with a 4" grizzly and an Elrus M6394 40 ft conveyor all electrically powered by a Wacker Neuson 38 kW generator. The conveyor feeds a Tycan 660 T Class screen deck that classifies to 3/16". The sluice run consists of a 36" by 5 ft initial run with expanded metal and a boil box. This run feeds a 24" by 26 ft run with expanded metal, Nomad matting and two mid-run boil boxes. A third sluice run was added that measures 30" by 30 ft and is lined with expanded metal and Nomad matting. Water is supplied from Clear Creek and recycled through a 9 by 152 m (30 by 500 ft) holding/settling pond at the base of the bench. Water is supplied at 1800 igpm and the plant is capable of handling 70 yd/hr.

SURFICIAL GEOLOGY AND STRATIGRAPHY The Big Alex bench is a right limit terrace to Clear Creek in the Tintina Trench. The bench surface is lower than the surrounding pre-Reid glacial fill. The bench likely formed when a high energy flow emptied out of the Clear Creek valley and cut

A test pit on the Big Alex bench at Clear Creek. Oxidation of the near surface gravel is the result of soil processes occurring on the relatively stable surface since the early Pleistocene. This is a typical Wounded Moose paleosol found in Tintina Trench.

into the Tintina Trench glacial fill. The bench gravel at surface is the primary pay unit and is described as oxidized, clast dominated, pebble-cobble gravel. Most of the clasts are subround to well-round. The gravel is interbedded with sand beds near the surface. The thickness of the Big Alex bench gravel is estimated to be 8 m (26 ft) and overlies sand-rich pre-Reid pebbly gravel likely derived from glaciation. The thickness of the underlying pre-Reid unit is unknown.

Bedrock Geology Bedrock is granite and quartz monzonite (GSC, Map 1143A).

Gold Characteristics The gold grains are typically 0.5 to 1 mm (35 to 18 mesh), can be up to 7 mm long and are very flat.

Wolf Head Discovery and Mining's plant on the Big Alex bench at Clear Creek.

Barlow, a tributary of Clear

115P/13 2013: 63°50'21"N, 137°34'47"W

Caw Mining and Exploration Ltd., 2008-2014

Water License: PM04-364 (Active 2014)

Active Producer (2010-2014) **Operation no. 151**

Location Barlow Creek, upper and lower.

Work History and Mining Cuts A joint venture between Aurek Holdings Ltd and Caw Mining and Exploration Ltd. Five to six miners and five camp personnel operated in two, 12 hour shifts daily on Barlow Creek. Ongoing reclamation occurred throughout all seasons as mining progressed. The upstream mining cut, located in the headwaters of Barlow Creek was 274 m (900 ft) wide and continually advanced upstream. Two downstream cuts measured 213 by 121 m (700 by 400 ft) and 121 by 152 m (400 by 500 ft). Stripping between 1.8 and 3.6 m (6 to 12 ft) of thawed ground was required because of old workings and frozen virgin ground.

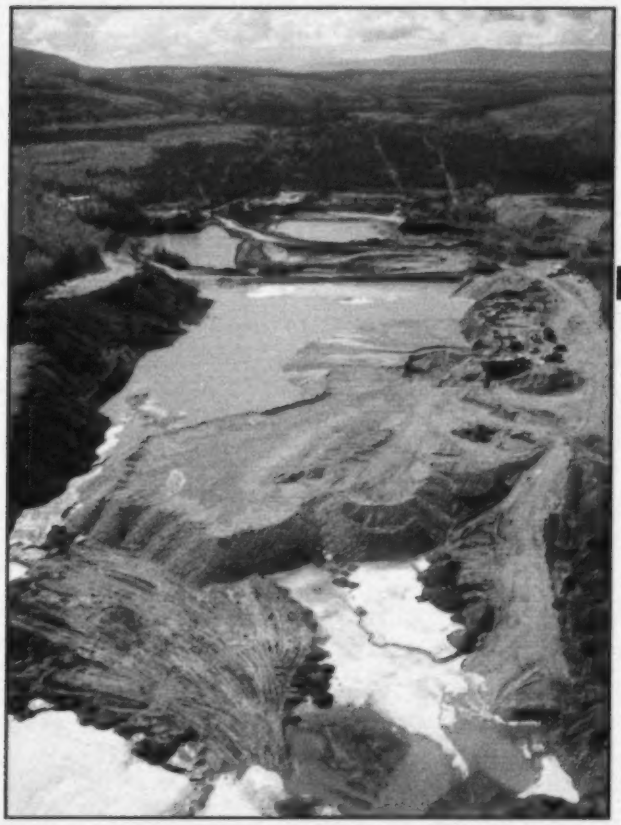
Equipment and Water Treatment Equipment included a John Deere 450D excavator, Hitachi 300 excavator, Komatsu 400 rock trucks, and a John Deere 5 yd loader. Also present was a Caterpillar D8K with an angle blade and a single shank ripper and a Caterpillar D9H with a U-blade and multi shank ripper. The wash plant consisted of a 15 ft trommel powered by a 45 kW generator and was able to process 60 to 75 loose cubic yards (46 to 57 m3) of gravel per hour. Water was provided at 1200 igpm by an 8 by 6" Volvo pump. Water was pumped from Barlow Creek and discharged out of steam into three ponds each 60 by 60 m (200 by 200 ft). For clean-ups a small vibrating Keene table and wheel were used.

Surficial Geology and Stratigraphy Lower Barlow Creek is a bulk placer deposit containing predominantly fine flat gold. The main gravel pay unit in lower Barlow Creek, where the majority of mining has occurred, overlies a false bedrock of silty sand. The sand unit is widespread across the valley floor (~275 m, 900 ft) and dips gently towards the left limit where the best pay is located. The colour of the sand is predominantly brown, however grey patches are present. These patches may have a higher quartz content and therefore are less oxidized. Placer gold and abundant pyrite are present within the sand unit, however it remains an untested target. Preliminary drill results into the sand suggest it is up to 12 m (40 ft) thick and additional gravel is present at depth. The pay unit overlying the sand consists of 3 m (10 ft) of compact Barlow Creek gravel. Approximately 1.5 m (4 ft) of less compact gravel overlies the lower gravel. The contact between the two gravel units is not easily distinguished in section, however it is apparent to the miners by the difference in energy required to excavate. The placer gold is primarily contained within the lower gravel. Also noted within the gravel units are isolated remnant mounds of diamicton. The diamict is an unsorted deposit of silt, sand, pebbles, and cobbles and is interpreted to be a cryoturbated mix of fluvial gravel and loess (periglacial deposit). It was not determined if the gold grade varied between the gravel and the periglacial gravel. Overlying the gravel units is approximately 3.5 m (12 ft) of frozen muck that requires thawing and stripping. The muck thickness is variable and increases in thickness towards the valley sides. Permafrost extends through the muck and into the gravel units. The gravel thaws quickly once the muck is removed, likely facilitated by its coarse texture. A localized bedrock rim was encountered on the left limit immediately above the Clear Creek access road. Grade improved slightly on the bedrock surface compared to the sand false bedrock.

A 4.5 m (15 ft) section of surficial sediment was exposed on upper Barlow Creek at the end of the 2013 season. Unit 1, between 0 to 0.5 m (0 to 1.6 ft), consists of pebble-cobble gravel on top of a slurry believed to be decomposed bedrock. The contact between unit 1 and unit 2 is undulating. Unit 2 is a pervasively oxidized pebble-cobble gravel that varies in thickness but is generally 0.25 m (10 inches) thick. Both gravel units contained an abundance of decomposed and highly fractured clasts with lenses of clasts completely degraded to clay. Capping the gravel units is 3.75 m (12 ft) of overburden with 25% fragmented clasts and minimal woody debris.

Bedrock Geology Bedrock is phyllite, shale, sandstone, conglomerate, and limestone (Mortensen, 1996).

Gold Characteristics Gold recovered is mostly fine and flat and has a purity of 830. Silver comprises the remainder of the precious metal content.



Caw Mining and Exploration Ltd. operation, in 2013, on lower Barlow Creek near its confluence with Clear Creek (Photo credit: Bill Leary).

Clear, a tributary of Stewart

115P/13 2013: 63°46'03"N, 137°35'28"W

Wasylenko, W., 1993-2011

Water License: PM02-302 (Expired 2013)
Water License: PM12-078 (Active 2023)
Active Producer (2010-2011) **Operation no. 152**

Location Clear Creek, downstream from the mouth of Henry Creek.

Work History and Mining Cuts Mr. Wasylenko continued to mine the frozen bank on the left limit of Clear Creek. Activity in 2011 involved stripping and sluicing. Stripping was also focused on the left limit bend immediately upstream of the lower Clear Creek canyon. Systematic reclamation occurred throughout the property. No activity occurred on site in 2012 or 2013.

Equipment and Water Treatment Equipment on site included two loaders, two bulldozers, and a Ross box.

Bedrock Geology Bedrock varies from phyllite, shale, sandstone, and conglomerate, to granite and quartz monzonite (Bostock, 1964).

Gold Characteristics Not reported.

Wally, a tributary of Clear

115P/13 2014: 63°45'18"N, 137°33'50"W

Hollingsworth, M., 2014
Wilson, K., 2008-2009, 2011, 2013

Water License: PM07-586-2 (Active 2018)
Water License: PM12-046 (Active 2022)
Active Producer (2011, 2013) **Operation no.153**

Location Wally Creek, left limit tributary to Clear Creek.

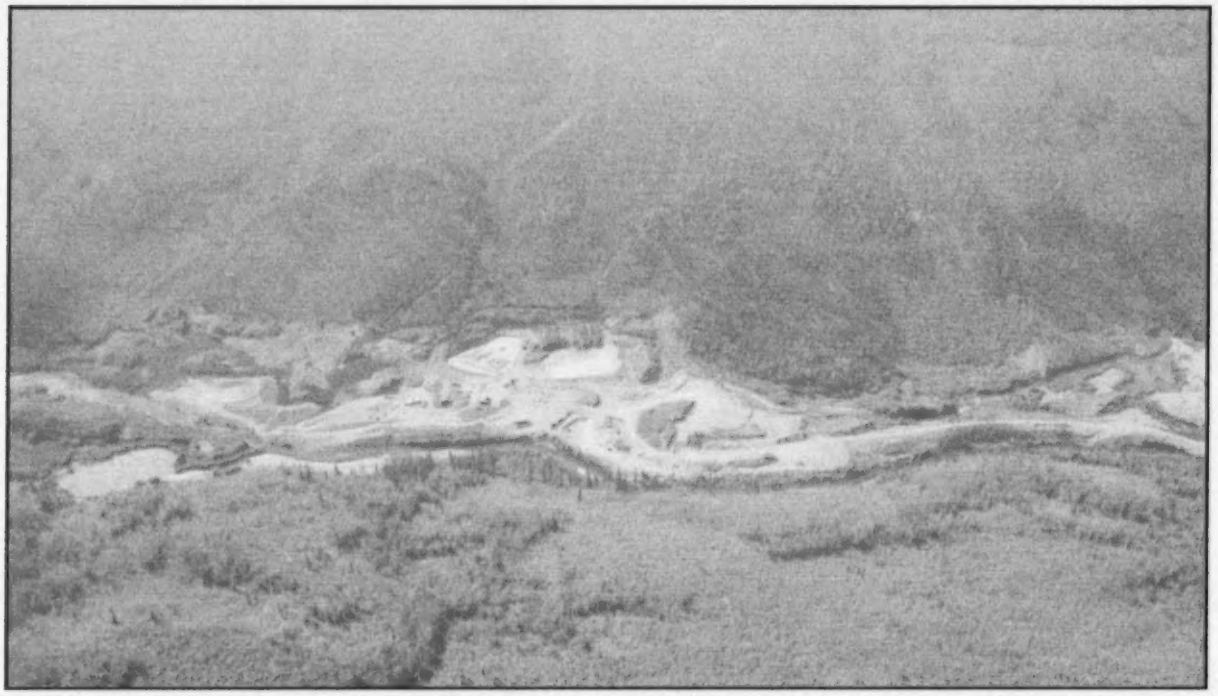
Work History and Mining Cuts Extensive mining on Wally Creek occurred throughout the 2011 season with progressive reclamation. In 2013, Mr. Wilson optioned his license to a third party that conducted testing in the upper reaches of Wally Creek with a small excavator and test plant. The water license was transferred from Mr. Wilson to Miss Hollingsworth in 2014.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is granite and quartz monzonite (Bostock, 1964).

Gold Characteristics Not reported.



Mr. Wasylenko's operation on Clear Creek in 2011 (Photo credit: Bill Leary).

Clear, a tributary of Stewart

115P/13 2014: 63°46'41"N, 137°31'23"W

Kosuta, D., 1995-1996, 2003, 2006, 2008-2013

Water License: PM05-467 (Active 2015)

Active Producer (2010-2013) **Operation no. 154**

Location Clear Creek, about 3 km downstream of confluence with Squaw Creek.

Work History and Mining Cuts A left limit deposit mined in 2008 and 2009 was reclaimed in 2010 while mining moved downstream to the lower reaches of the property. The right limit close to camp was stripped in 2010 and mined in 2011. Upper claims along the right limit of Clear Creek were also mined in 2011. No mining information has been recorded for 2012 and 2013.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is granite and quartz monzonite (Bostock, 1964).

Gold Characteristics Not reported.

Clear and Eldorado, a tributary of Stewart

115P/14 2013: 63°46'23"N, 137°25'26"W

Scott, J., 1998-2013

Water License: PM09-631 (Active 2019)

Active Producer (2010-2013) **Operation no. 155**

Location Clear Creek, at the mouth of Eldorado Creek.

Work History and Mining Cuts No reported work history is available for 2010 and 2012 with minimal information recorded for 2011 and 2013. Active stripping and mine cut preparation occurred in 2011 along the left limit of Clear Creek at the mouth of Eldorado Creek. Mining continued around the mouth of Eldorado in 2013 but the extent of activity is unknown.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is granite and quartz monzonite (Bostock, 1964).

Gold Characteristics Not reported.

Left Clear, a tributary of Clear

115P/14 2014: 63°50'15"N, 137°08'19"W

Blackstone Placer Mining Ltd., 1978-1997, 2004-2014

Water License: PM08-604 (Active 2019)
Active Producer (2010-2014) **Operation no. 156**

Location Left Clear Creek, upper reaches.

Work History and Mining Cuts Activity in 2012 and 2013 is unknown, with minimal information available for 2010 and 2011. The 2010 season included stripping and mining of the left limit frozen bank upstream of the 2009 mine cut. In 2011, the left limit of Left Clear Creek, across the valley from camp was prepared and mined. In 2014 three miners and one camp cook mined in two areas on upper Left Clear Creek. The upstream cut was located above camp in an area of thick, coarse gravel accumulation. The main cut was downstream of camp located on the left limit.

Equipment and Water Treatment Equipment on site in 2014 included a Caterpillar 235 excavator to mine and stock pile pay, a Hough 90E loader to feed the wash plant and remove tailings, and two Caterpillar D8 bulldozers for stripping overburden. The wash plant consisted of a five cubic yard wet hopper that has a controlled discharge into a 40 ft trommel. The trommel feeds a double screen deck with a 1½" screen over a 1/2" screen. The oversize from the 1/2" screen empties into a sluice run which is 2 ft wide by 20 ft long and lined with 2" angle iron riffles for the first 2 ft, followed by a nugget trap and expanded metal on Nomad matting. The undersize from the 1/2" screen flows into a sluice run that is 4 ft wide by 20 ft long with expanded metal riffles.

Surficial Geology and Stratigraphy The placer geology in upper Left Clear Creek is influenced by pre-Reid (early Pleistocene) alpine glaciation. The 2014 cut above camp is located within the glacial limit, which is reflected in the abundance of large boulders in the area. Conversely, the 2014 cut below camp is beyond the limit of glaciation and has entirely a fluvial and glaciofluvial origin. A section measured at their 2014 cut within the glacial limit consists of four units. Unit 1 from 0 to 4.3 m (0 to 14 ft) is a poorly to moderately sorted boulder-rich gravel with crude imbrication. Rare beds of sand and pebbles are present and overall the unit is 70% clasts. A crude flow direction

Blackstone Placer Mining's wash plant on Left Clear Creek.

towards 293° was measured from clast imbrication in the lower 2 m (6.5 ft). Unit 2 from 4.3 to 8.8 m (14 to 29 ft) is similar to unit 1, however is less sorted and the clasts have a crude flow direction towards 346° based on imbricated cobbles and boulders. Unit 3 from 8.8 to 9.8 m (29 to 32 ft) has a sharp contact with unit 2 that dips northward. Unit 3 is similar to the underlying units and is moderately sorted with more pebbles than the underlying gravel. Unit 4 from 9.8 to 10.3 m (32 to 33.8 ft) is silt and sand. The boulder units likely represent a former glacial moraine deposit that was reworked by fluvial processes. The origin of the coarser gold in the boulder gravel is thought to come out of the left limit tributary near where the exposures are located. The three gravel units have flow imbrications that support this origin for the coarse gold. The main valley is thought to only have fine gold, however a deeper channel may be present towards the middle of the valley, which is partially buried by colluvium.

The 2014 cut located below their camp is much shallower and less coarse than the upstream location. The gravel section is approximately 2.4 m (8 ft) deep and consists of 0.6 m (2 ft) of modern creek gravel overlying 1.8 m (6 ft) of mixed fluvial gravel and decomposed clay-rich bedrock. The lower unit is the pay and is greenish in colour, but has an oxidized upper contact.

Bedrock Geology Bedrock is phyllite, shale, sandstone, conglomerate, and limestone (Mortensen, 1996).

Gold Characteristics The placer gold is a mixture of fine and coarse gold with some nuggets. The fineness is 820.

Vancouver, a tributary of McQuesten

115P/11 2007: 63°42'40"N, 137°04'16"W

Pratt, K., 2000-2011, 2013

Water License: PM05-463 (Closed 2010)
Water License: PM10-047A (Active 2020)
Active Producer (2010-2011, 2013) **Operation no. 157**

Location Vancouver Creek, upper.

Work History and Mining Cuts Minimal information is available regarding to Mr. Pratt's mining activity on Vancouver Creek. In 2011 the only documented activity included improving access and working on equipment. Washouts obstructed access in 2013 and work was conducted to restore access. No specific mining or work history is documented.

Equipment and Water Treatment Not reported.

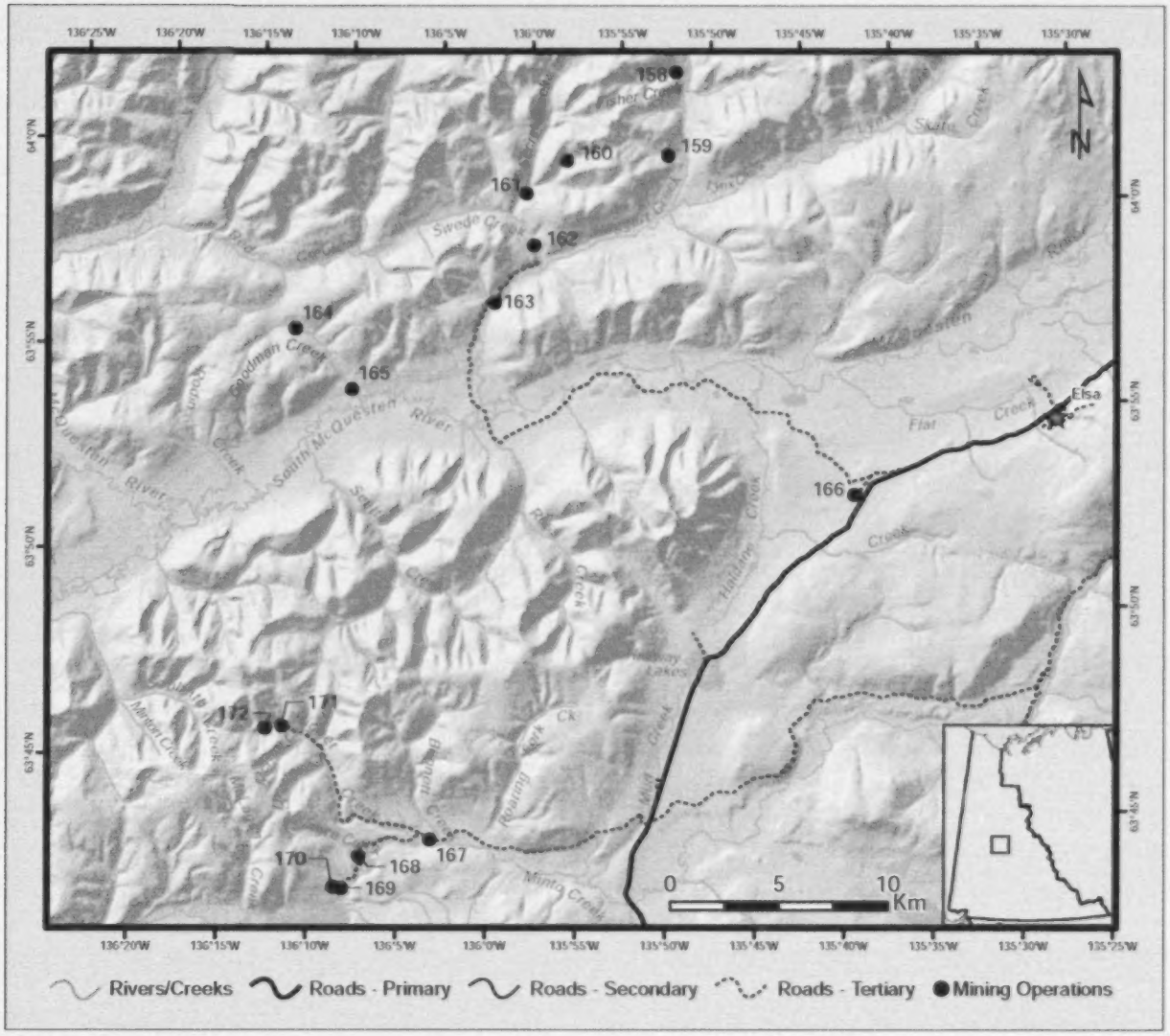
Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is phyllite, shale, sandstone, conglomerate, and limestone (Bostock, 1964).

Gold Characteristics Not reported.

MAYO
PLACER AREA

SITES 158 - 172



LEGEND

158 ..... O.H. Transport Inc.
159 ..... Dye, K. and B.
160 ..... Minelli, T.
161 ..... Evans, V.
162 ..... Plut, F.
163 ..... 532 Placer Mining
164 ..... Herman, T.
165 ..... Gimlex Enterprises Ltd.
166 ..... Klippert, K.
167 ..... Wilson, K.
168 ..... Hartmann, H.
169 ..... Mueller, R.
170 ..... Jardine, W.
171 ..... Lone, H. and B.
172 ..... Graham, B.

Fisher Gulch, a tributary of Haggart

106D/04 2014: 64°02'27"N, 135°51'53"W

O.H. Transport Inc., 2009-2014

Water License: PM14-007 (Active 2024)
Active Producer (2010-2014) **Operation no. 158**

Location Fisher Gulch, right limit tributary of upper Haggart Creek.

Work History and Mining Cuts Exploration began on Fisher Gulch in 2009 and continued until 2014 when the water license was issued. Testing was conducted on both limits and included test pitting and bulk sampling using a small screen deck to process material. In 2014, the Zaluski family, along with another miner, operated a daily shift and mined progressively upstream on the left limit.

Equipment and Water Treatment Equipment in 2014 included a John Deere 225D excavator, Caterpillar D7 bulldozer, wheel loader, and dump truck. The wash plant consisted of a static grizzly, able to process 40 loose cubic yards (31 m^3) of gravel per hour. A 4" Gorman-Rupp pump powered by a 2 cylinder diesel engine supplied the plant with water. Water was 100% recycled in a series of two ponds, each (50 by 100 ft). A long tom and gold wheel were used for clean ups.

O.H. Transport Inc.'s 2014 cut and wash plant.

Surficial Geology and Stratigraphy The cut exposure in 2014 consists of 4.3 m (14 ft) of poorly sorted, clast supported, weakly stratified, cobble-boulder gravel and pebble-cobble gravel, with angular to subrounded clasts. Matrix consists of medium to coarse sand and the section is pervasive iron and manganese stained throughout. Bottom 1 to 2 m (3.3 to 6.6 ft) of gravel and 0.3 to 0.6 m (1 to 2 ft) of bedrock was sluiced.

Bedrock Geology Bedrock is highly fractured phyllite and quartzite.

Gold Characteristics There are potentially five different types of gold recovered from Fisher Gulch. Gold is mostly 12 mesh with the finest 30 mesh.

Fifteen Pup, a tributary of Haggart

106D/04 2014: 64°00'25"N, 135°52'06"W

Dye, K. and B., 2011-2014

Water License: PM10-067 (Active 2016)
Active Producer (2011-2014) **Operation no. 159**

Location Fifteen Pup, 0.8 km upstream from its confluence with Haggart Creek.

Work History and Mining Cuts Keith and Betty Dye operated at a small scale from 2011 to 2014; they conducted exploration and mined progressively upstream on the right limit.

Equipment and Water Treatment Equipment on site in 2014 included a Case 580 backhoe, Allis-Chalmers HD6 bulldozer, and Caterpillar 955L bulldozer. The wash plant was 4 ft diameter by 20 ft long trommel, with a 1" screen, able to process 35 loose cubic yards (27 m^3) per hour. The sluice run was 2.5 ft wide by 8 ft long and consisted of a

Aerial view of Fisher Gulch in 2014 (Photo credit: Helena Kuikka).

Upstream view of Keith and Betty Dye's cut on Fifteen Pup in 2014.

punch plate and angle iron. Water was 100% recycled in a series of four ponds. Clean-ups were conducted using a table and wheel.

Surficial Geology and Stratigraphy The right limit section in 2014 consists of three units. Unit 1, from 0 to 2.5 m (0 to 8.2 ft), is a cobble dominated, clay rich diamicton, with subangular to angular clasts, minimal boulders but the largest reported is over 1 m (3.3 ft). Unit 2 is an undulating, poorly sorted, boulder layer, is present from 2.5 to 3.5 m (8.2 to 11.5 ft) and consists of 50% boulders, 35% cobbles, and 15% pebbles. Oxidation is pervasive throughout, and clasts are subangular. Unit 3, from 3.5 to 7 m (11.5 to 23 ft), is similar to unit 1 except it includes more organics (roots). Overlying the section is a moss mat up to 0.5 m (1.6 ft) thick. Up to 2.4 m (8 ft) of gravel and 1.2 m (4 ft) of bedrock was sluiced.

Aerial view of the Dye's operation on Fifteen Pup in 2013 (Photo Credit: Bill Leary).

Bedrock Geology Bedrock is highly fractured quartzite to decomposed phyllite.

Gold Characteristics Gold is all flat, and is a maximum of pea-sized.

Secret, a tributary of Swede

106D/04 2013: 64°00'09"N, 135°57'44"W

Minelli, T., 2011-2014

Water License: PM11-058 (Active 2022)
Active Producer (2011-2014) **Operation no. 160**

Location Secret Creek, right fork.

Work History and Mining Cuts The Minelli family first operated on the upper right fork of Secret Creek in 2011 and conducted test pitting and sluicing. Testing continued in 2012 with a small screen deck. In 2013 and 2014, they were active on the right fork of Secret Creek but primarily operated under PM11-052 on lower Secret Creek. A left limit bench on upper Secret Creek was also monitored and tested in 2014.

Equipment and Water Treatment Equipment in 2014 included a John Deere 330 LC excavator, John Deere 755 track loader, and Nodwell 110 backhoe. The wash plant consisted of a vibrating screen deck with a 1.5" screen and able to process up to 130 loose cubic yards (99 m^3) of material per hour. It had two sluice runs, 2 ft wide by 8 ft

long with angle iron over a 4 by 4 ft run comprising angle iron, and a final tail sluice that is 4 ft wide by 10 ft long, with angle iron and expanded metal. Clean-ups were conducted using a long tom and a wheel.

Surficial Geology and Stratigraphy The poorly exposed section on Secret Creek consists of 10.75 m (35 ft) of interbedded pebble-cobble gravel, silty lenses, and buried organics.

Bedrock Geology Bedrock is fractured to decomposed phyllite.

Gold Characteristics Gold is of various shapes and sizes and has a fineness of 899 to 902.

The Minelli's 2014 operation on main Secret Creek.

Mr. Minelli stripping and preparing ground in 2014, operating under PM11-052.

Secret, a tributary of Haggart

105M/13 2014: 63°59'17"N, 135°59'55"W

Evans, V., 2005-2014

Water License: PM04-448 (Closed 2013)
Water License: PM11-052 (Active 2022)
Active Producer (2010-2014) **Operation no. 161**

Location Secret Creek, approximately 1.2 km upstream from its confluence with Swede Creek.

Work History and Mining Cuts Mr. Evans and Mr. Bauman operated a daily shift on Secret Creek from 2010 to 2014. Mining occurred progressively upstream in 2013, with one large cut on the left limit, approximately 230 by 140 m (755 by 450 ft). A left limit bench was mined in 2014, approximately 250 m (820 ft) long by 50 ft (164 ft) wide.

Equipment and Water Treatment Equipment on site in 2013 included two Caterpillar 330 excavators with 3 yd buckets, one Caterpillar 220 excavator with a 2 yd bucket, one Komatsu bulldozer, and one 747 track loader with a 5 yd bucket. The wash plant consisted of a conveyor fed gravity Derocker with a 10 by 8 ft hopper, a 20 ft long by 8 ft wide Derocker, and three sluice runs 2 ft wide and 17 ft long. Riffle size varied from 1.0 to 1.5" with drop slots 2" apart with an open grid pattern 2" over 2 pads. Water was supplied by an 8 by 6" John Deere pump at 1200 igpm, processing 250 to 300 loose cubic yards (190 to 230 m^3) gravel per hour, depending on the feed rate. Water was acquired from Secret Creek and recycled after discharge through a settling pond 200 by 45 m (656 by 147 ft). Clean-ups were done in two stages, using wheels and tables.

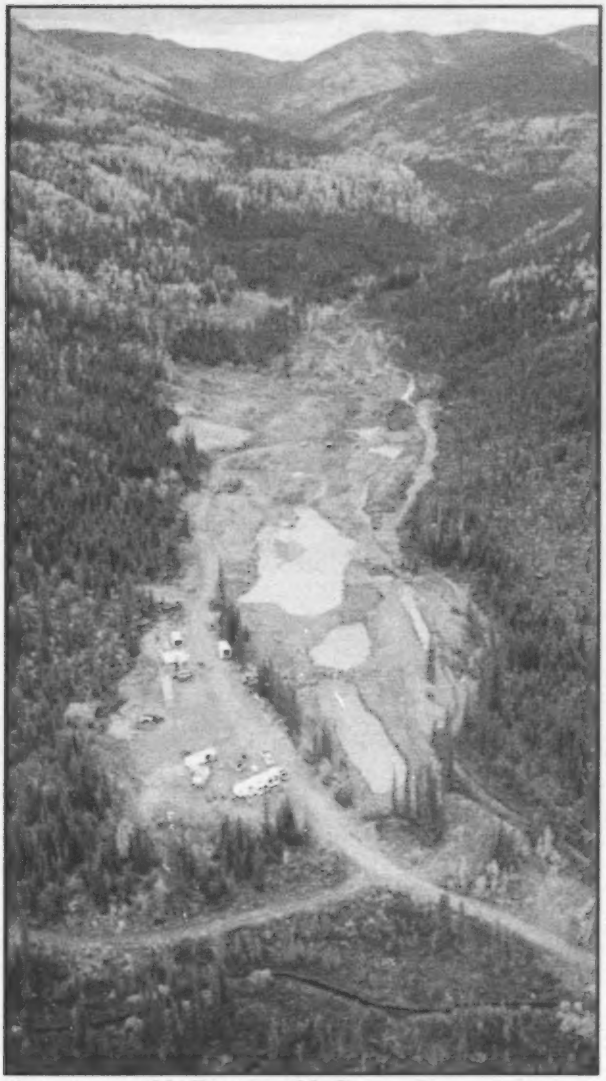
Surficial Geology and Stratigraphy On the left limit cut, decomposed bedrock is sloped and undulating throughout the section, varying the thickness of gravel. At the base of the section between 0 to 1.5 m (0 to 5 ft) is a stratified boulder-cobble gravel with slight imbrication. Overlying this unit, extending between 1.5 to 2.15 m (5 to 7 ft), is interbedded lenses of cobbles, sand and pebble-

Custom fabricated wash plant on Secret Creek in 2014.

cobble gravel, with an undulating, highly oxidized pebble-cobble layer capping the upper part of the unit. Unit 3, from 2.15 and 4.8 m (7 to 16 ft), is a massive, matrix-supported gravel, predominately dominated by pebbles and cobbles with minor boulders. The sluiced section consisted of 1.2 m (4 ft) of gravel from unit 1 and up to 1.8 m (6 ft) of decomposed bedrock.

Bedrock Geology Bedrock is fractured to decomposed phyllite.

Gold Characteristics Gold recovered is of various shapes and sizes, 95% fine and 5% coarse with a fineness of 899 to 902.



Aerial view of Mr. Evans and Mr. Bowmen's operation on Secret Creek in 2011 (Photo credit: Bill Leary).

Swede, a tributary of Haggart

105M/13 2013: 63°58'03"N, 135°59'21"W

Plut, F., 2005-2010, 2012-2014

Water License: PM05-464 (Active 2015)
Active Producer (2010, 2012-2014) **Operation no. 162**

Location Swede Creek, 1 km from its confluence with Haggart Creek.

Work History and Mining Cuts In 2010 a small 150 by 150 m (492 by 492 ft) stripping program was completed on the right limit, upstream from the previous mine cut. An exploration program conducted by a third party and a small cut is the only documented activity during 2012. Extensive exploration mining within the valley bottom of Swede Creek occurred in 2013, with activity extending north that tested an upper bench. Work history in 2014 is unknown.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy An exposure on lower Swede Creek measuring 7.6 m (25 ft) in height contained two units. Unit 1, at the base, is 2.7 m thick (9 ft) and consists of a massive boulder-cobble diamict. Overlying unit 1 is 4.9 m (16 ft) of, crudely stratified layers of boulder-cobble gravel varying in oxidation level and granule content. Isolated lenses of sand, pebbly sand, and weakly stratified pebble-cobble gravel are present throughout the exposure.

Bedrock Geology Bedrock is phyllite, shale, sandstone, conglomerate, and limestone (Roots, 1997).

Gold Characteristics Not reported.

Mr. Plut's operation on Swede Creek in 2011 (Photo credit: Bill Leary).

Murphy's Pup, a tributary of Haggart

115P/16 2014: 63°56'35"N, 136°01'23"W

532 Placer Mining, 2011-2014

Water License: PM07-558 (Active 2017)
Active Producer (2011-2014) **Operation no. 163**

Location Murphy's Pup, at the confluence with Haggart Creek.

Work History and Mining Cuts Two miners worked on 532 Placer Mining's operation from 2011 to 2014, with activity focused at the mouth of Murphy's Pup and its confluence with Haggart Creek. Pay dirt from the lower cut in 2013 and 2014 was hauled 500 m upstream to the wash plant situated in the 2012 cut. Activity was focused on the left limit of Murphy's Pup.

Equipment and Water Treatment Equipment consisted of a Caterpillar 322 excavator, John Deere 710 D backhoe, and dump truck. The wash plant consisted of 8 ft screen deck with a 3 ft wide by 16 ft long sluice run with half angle iron and half expanded metal. Material dependant, the plant was able to process 25 loose cubic yards (19 m^3) of gravel per hour. They operated a closed cell settling facility with a full recycle pumping system. Clean-ups were conducted using a pan and wheel.

532 Placer Mining on Murphy's Pup in 2011 (Photo credit: Bill Leary).

Surficial Geology and Stratigraphy Four units are exposed in the left limit cut completed in 2014. Unit 1, at a minimum thickness of 0.6 m (2.0 ft), consists of massive, medium-grained sand, with up to 10% pebbles. From 0.6 to 1.7 m (2.0 to 5.6 ft), unit 2 is an undulating, boulder-cobble gravel that fines upwards, with a boulder lense present in the lowermost 0.5 m (1.5 ft) of the section. It has a fine-grained sand and granules matrix, an abundance of highly weathered clasts, is weakly oxidized in patches, and imbricated downstream. Unit 3, a pebble gravel from 1.7 to 2.2 m (5.6 to 7.2 ft), is a clast supported, well sorted, fine-grained sandy matrix gravel, dominated by flat, subangular pebbles and weakly imbricated in the downstream direction. Overlying the lower three units is unit 4, a 2.2 m (7.2 ft) thick unit; the overall thickness is unknown due to stripping. Unit 4 consists of silt with large organics (woody debris) and approximately 5% enriched in pebble-sized clasts. All gravel was sluiced.

Bedrock Geology Bedrock is decomposed blue schist.

Gold Characteristics Gold is all fine with no nuggets.

Left-limit cut on lower Murphy's Pup in 2013.

Goodman, a tributary of South McQuesten

115P/16 2013: 63°55'41"N, 136°12'30"W

Herman, T., 2012-2014

Water License: PM12-040 (Active 2017)
Active Producer (2012-2014) **Operation no. 164**

Location Goodman Creek, upper, approximately 4.6 km upstream from its confluence with McQuesten River.

Work History and Mining Cuts In 2012 a small cut measuring approximately 51 by 25 m (167 by 82 ft), was stripped below camp about 25 m (82 ft) from Goodman Creek. Mr. Herman and his two personnel crew were on site in 2013 but extent of activity is not reported. A three-week testing program utilizing an auger drill was conducted by Mr. Herman in 2014.

Equipment and Water Treatment Equipment on site included a skid steer, loader, excavator, and trommel.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is phyllite, shale, sandstone, grit, conglomerate, and limestone (Murphy and Heon, 1996).

Gold Characteristics Not reported.

Goodman, a tributary of south McQuesten

115P/16 2014: 63°54'17"N, 136°09'07"W

Gimlex Enterprises Ltd., 2014
Klippert, K., 1993-2009

Water License: PM11-032 (Active 2022)
Active Producer (2014) **Operation no. 165**

Location Goodman Creek, near the mouth.

Work History and Mining Cuts In 2014 the property was purchased by Gimlex Enterprises Ltd. from C. Klippert. A crew of three people completed a late season exploration program near the mouth of the creek. The work consisted of auger drilling, test pitting, trail construction, and sample processing.

Equipment and Water Treatment Drilling was completed using an 8" auger drill mounted on a Nodwell. A Komatsu PC60 excavator was used for building trails and test pitting, and a Bombardier was used as a service vehicle to transport crew and samples. Sample processing was completed using a long tom.

Auger drilling into Reid glacial sediments on Goodman Creek.

Surficial Geology and Stratigraphy The left limit of Goodman Creek near the mountain front is underlain by a silt-rich Reid till. The ground is shallower on the right limit where bedrock outcrops.

Bedrock Geology Bedrock is mapped as upper Proterozoic to lower Cambrian limestone, shale, sandstone, quartz-pebble conglomerate and minor marble.

Gold Characteristics The gold is fine grained with a fineness of 820.

Unnamed, a tributary of Haldane

105M/13 2009: 63°52'23"N, 135°40'37"W

Klippert, K., 2008-2009, 2011-2012

Water License: PM06-527 (Active 2017)
Active Producer (2011-2012) **Operation no. 166**

Location Unnamed creek, right limit tributary of Haldane Creek.

Work History and Mining Cuts Testing was conducted throughout the years on the property but no specific work history is documented. Stripping, ramp construction, and drain expansion all took place throughout 2011, with small trench testing and one large 275 m (902 ft) drain constructed in 2012.

Equipment and Water Treatment Equipment present on site consisted of one Hitachi Zaxis 330LC excavator and a small test box.

Surficial Geology and Stratigraphy The Haldane Creek area has both shallow and deep targets. The shallow targets are located near the Silver Trail-South McQuesten road junction and consist of thin deposits of outwash gravel in bedrock channels that were cut by glacial meltwater

Mr. Klippert's operation in 2011 on unnamed tributary to Haldane Creek (Photo credit: Bill Leary).

flowing between the ice and the hillside. The deeper targets are located in the middle of the Haldane Creek valley near the South McQuesten road. Little is known about these targets and they are suspected to be in coarse outwash gravel.

Bedrock Geology Bedrock is phyllite, shale, sandstone, grit, conglomerate, and limestone (Roots, 1997).

Gold Characteristics Not reported.

Minto, a tributary of Mayo

115P/09 2013: 63°43'25"N, 136°03'20"W

Wilson, K., 2013-2014

Water License: PM11-063 (Active 2017)
Active Producer (2013-2014) **Operation no. 167**

Location Minto Creek, 6.5 km downstream from Minto Lake.

Work History and Mining Cuts Mr. Wilson has an agreement from Miss. L. Jardine to mine Minto Creek. In 2012 activity was limited and consisted of two test pits with activity increasing in 2013 to active sluicing. Sluicing continued in 2014 with two large cuts mined throughout the season.

Equipment and Water Treatment Equipment on the site included a Caterpillar D9 bulldozer, two loaders, and an excavator. The mining operation recycled water obtained from Minto Creek and had no discharge.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is phyllite, shale, sandstone, grit, conglomerate, and limestone (Bostock, 1964).

Gold Characteristics Not reported.

McIntyre, a tributary of Minto

115P/09 2013: 63°42'55"N, 136°07'14"W

Hartmann, H., 2005-2009, 2011-2014

Water License: PM03-323 (Active 2014)
Active Producer (2011-2014) **Operation no. 168**

Location McIntyre Creek, lower.

Work History and Mining Cuts Several test pits on the right limit of McIntyre Creek, along the access road to camp, were mined in 2011. In 2012, exploration continued with hand testing, in a test pit located upstream from camp. Testing and hand mining continued throughout 2013 in the same location as 2012 and testing was also completed on bank gravel located along the access road. Work history is unknown in 2014.

Equipment and Water Treatment Mr. Hartmann primarily mined by hand but also had someone testing with equipment.

Surficial Geology and Stratigraphy A bank exposure along the access road in 2013 consists of 0 to 2.5 m (0 to 8 ft) of massive, subangular, boulder-cobble gravel with patchy oxidation throughout and minimal organics. Large boulders up to 1 m (3.3 ft) are present in the section, although are sporatic. Isolated lenses of silty clay, up to 20 cm in thickness, are present in the lower 0.9 m (3 ft) of the exposure.

Bedrock Geology Bedrock is phyllite.

Gold Characteristics Gold recovered is very fine.

McIntyre Creek cut along the access road in 2013.

Juniper, a tributary of Jarvis

115P/09 2013: 63°42'07"N, 136°08'07"W

Mueller, R., 1998-2003, 2007-2008, 2013

Water License: PM03-324 (Active 2013)
Active Producer (2013) **Operation no. 169**

Location Juniper Creek, a tributary of Jarvis Creek.

Work History and Mining Cuts From 2010 to 2012 no activity on Jarvis Creek under PM03-324 is documented. In 2013, three to four miners mined a cut on Juniper Creek, a tributary of Jarvis Creek.

Equipment and Water Treatment Equipment included a Caterpillar D8 bulldozer, Hitachi 270 excavator, and a small JCB excavator. The wash plant consisted of a single screen deck. A gravity fed pump pond was used to supply to the wash plant.

Surficial Geology and Stratigraphy A cut exposed in 2013, consists of 12 m (40 ft) of stratified boulder-cobble gravel interlayered with pebble-cobble gravel. An isolated, 0.2 to 0.5 m (0.6 to 1.6 ft) thick sand lense was present in the upper part of the cut. Clasts are subrounded to rounded, with 20% boulders present throughout. Highly oxidized lenses of gravel are present in the upper parts of the section, with minor organics in the top 0.5 m (1.6 ft) of gravel.

Bedrock Geology Bedrock is blocky schist.

Gold Characteristics Not reported.

Sluicing on Juniper Creek in 2013 at Mr. Mueller's operation.

Jarvis, a tributary of Minto

115P/9 2013: 63°42'8"N, 136°08'35"W

Jardine, W., 1998-2014

Water License: PM09-651 (Active 2015)
Active Producer (2010-2014) **Operation no. 170**

Location Bench above Minto Lake.

Work History and Mining Cuts In 2011, Mr. Jardine and his son mined together, sluicing approximately 66 loose cubic yards (50 m^3) of gravel per hour and completing reclamation work on the downhill side of a previously stripped area. Exploration was developed for testing on the uphill side of the cleared mining area. A 2.7 by 9.1 by 9.1 m (9 by 30 by 30 ft) cut was mined throughout the 2012 season and continued into the 2013 mining season. Mr. Jardine conducted a small stripping program and completed reclamation by the end of 2013. Mr. White conducted testing on Mr. Jardine's operation in 2014, test pitting along the access road, as well as on the bench where 2012 and 2013 activity occurred.

Equipment and Water Treatment In 2013 a P&H excavator and a screen deck were on site. The gravity fed recirculating pond enabled Mr. Jardine to be a fully recycled bench mining operation with no stream impacts. For the testing program in 2014, two excavators were present.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartz mica schist.

Gold Characteristics Gold recovered is fine and platy.

Mr. Jardine at his wash plant and active cut on the bench above Minto Lake in 2013.

Highet, a tributary of Minto

115P/16 2014: 63°45'59"N, 136°11'56"W

Lone, H. and B., 1999-2014

Water License: PM03-316 (Active 2014)
Active Producer (2010-2014) **Operation no. 171**

Location Highet Creek, upper, at the mouth of Rudolph Gulch.

Work History and Mining Cuts Mr. and Mrs. Lone have mined for fifty plus years, with the past ten years consisting of minimal activity. In 2014 activity increased and the Lones progressively mined upstream on the right limit.

Equipment and Water Treatment The equipment in 2014 included Caterpillar 330B excavator and a Trojan loader. The wash plant consisted of a static grizzly over a 3.5 ft wide by 17 ft long sluice run with a 1/2" punch plate and expanded metal. A 6" pump supplied water to the plant enabling it to process 50 to 60 loose cubic yards (38 to 46 m3) per hour. A long tom was used for clean-ups and completed on a table.

Surficial Geology and Stratigraphy An exposure in a right limit cut of Highet Creek consists of three units. Unit 1, from 0 to 1.6 m (5.3 ft), is a grey massive cobble-pebble gravel, with 60 to 70% matrix comprising fine to medium-grained sand. The massive gravel consists of angular to subangular clasts with a maximum clast size of 15 cm, and includes lenses up to 10 cm of granules and medium to coarse sand. Unit 2, from 1.6 to 2.4 m (5.3 to 7.9 ft), is a pervasively oxidized cobble-pebble gravel, which is primarily clast supported with 5% boulders, 25% cobbles, and 70% pebbles in a silty-sand matrix. Clasts are primarily subangular and weakly imbricated downstream, evident in the clasts present in the upper section of the unit. Unit 3 is a moss mat layer from 2.4 to 2.5 m (7.9 to 8.2 ft). The pay unit is the lower grey gravel.

Bedrock Geology Bedrock is quartzite and biotite schist.

Gold Characteristics Gold is coarse, and has a fineness of 830 to 840.

Highet, a tributary of Minto

115P/16 2009: 63°45'53"N, 136°12'52"W

Graham, B., 2012-2013
Erl Enterprises, 1961-2011

Water License: PM04-389 (Active 2014)
Water License: PM04-389A (Active 2014)
Active Producer (2010, 2012-2013) **Operation no. 172**

Location Highet Creek, at the confluence with Harvey Gulch.

Work History and Mining Cuts Work history in 2010 and 2013 was not documented and in 2011 the mine was inactive. Mr. Graham's initial season of operation in 2012 consisted of sluicing but specific details are unknown.

Equipment and Water Treatment The equipment documented on site in 2013 included an excavator, loader, a track loader, and a gravity fed sluice box.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is biotite schist and quartzite.

Gold Characteristics Gold is coarse.

Upstream view of Mr. and Mrs. Lone's operation at the mouth of Rudolph Gulch in 2014.

DUNCAN CREEK
PLACER AREA

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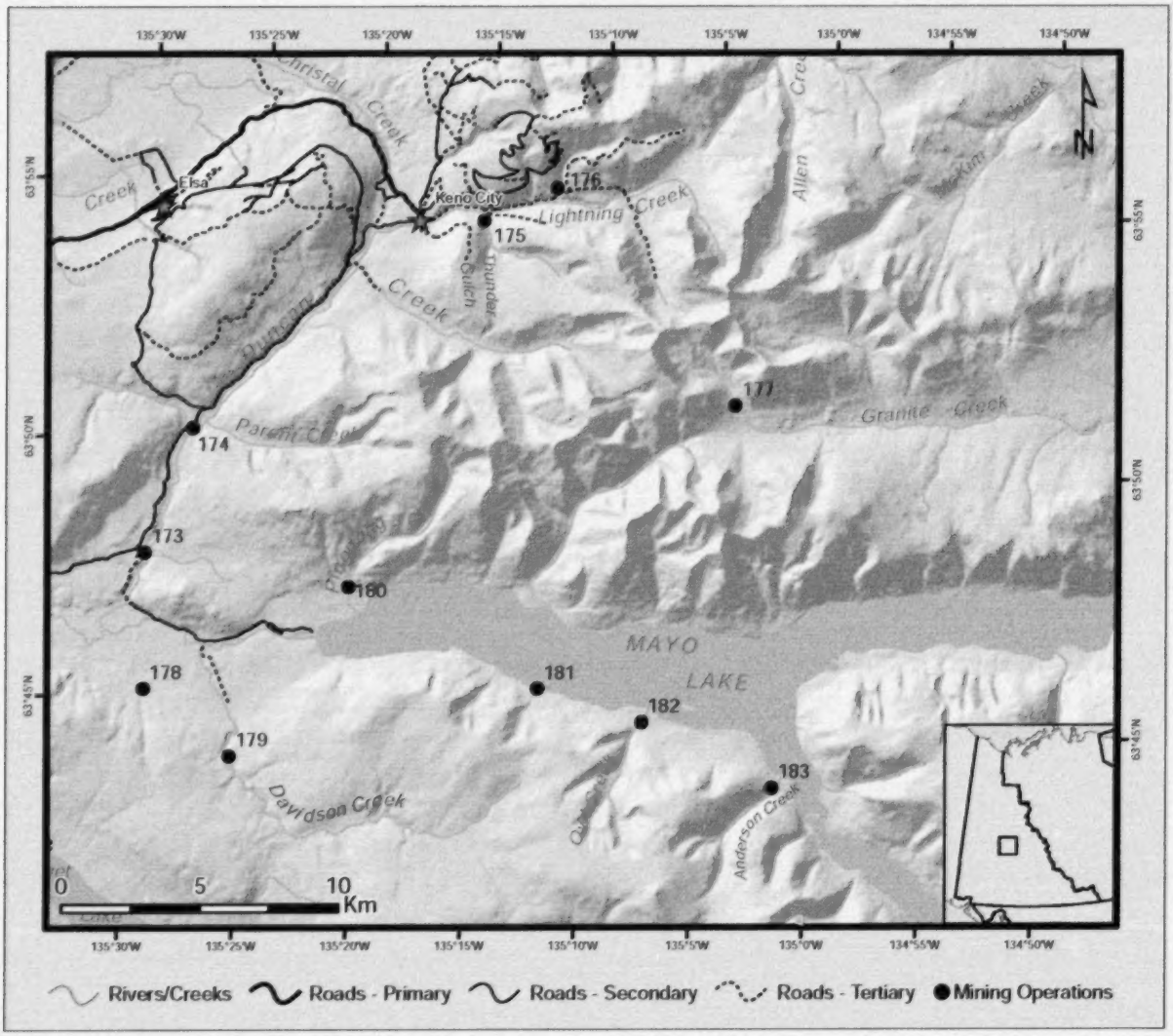

LEGEND

173 ..... Duncan Creek Golddusters Ltd.
174 ..... Zeiler, M.
175 ..... Bardusan Placers Ltd.
176 ..... Roy, L.
177 ..... Davies, J.
178 ..... Plut, F.
179 ..... Rivest, P.
180 ..... Ping Pong Mining
181 ..... Wozniak, M.
182 ..... Barchen, R.
183 ..... Aurora Mines Inc.

DUNCAN, A TRIBUTARY OF MAYO RIVER

105M/14 2014: 63°47'50"N, 135°29'33"W
105M/14 2013: 63°47'30"N, 135°29'56"W

Duncan Creek Golddusters Ltd., 1975-2014

Water License: PM94-093 (Active 2015)
Active Producer (2010-2014) **Operation no. 173**

LOCATION Duncan Creek, approximately 3 km upstream from its confluence with Mayo River.

WORK HISTORY AND MINING CUTS From 2010 to 2014, three miners and one camp personnel operated a daily 12 hour shift at the Taylor's operation on Duncan Creek. In 2010, two areas were mined – first on Mr. Zeiler's property upstream from May to July and then downstream from August to October, approximately 5.6 km (3.5 mi) upstream from the confluence with Mayo River. Throughout 2010, they stripped approximately 15 291 m^3 (20,000 yd^3) and sluiced approximately 17 004 m^3 (22,240 yd^3). Mining continued in 2011 approximately 5.6 km (3.5 mi) upstream from the confluence with Mayo River stripping approximately 21 121 m^3 (27,625 yd^3) and sluicing 17 050 m^3 (22,300 yd^3). Two locations were mined in 2012 – one immediately upstream of the 2011 cut and a second downstream, roughly 2.4 km (1.5 mi) upstream from the confluence with Mayo River. Significant work occurred in 2012 stripping approximately 52 456 m^3 (68,610 yd^3) and sluicing 16 300 m^3 (21,320 yd^3). Continuing with the cut 2.4 km (1.5 mi) upstream from its confluence with Mayo River on the right limit, the Taylors stripped 33 082 m^3 (43,270 yd^3) and sluiced 23 016 m^3 (30,104 yd^3) in 2013. In 2014, the majority of activity was focused on the right limit near Beliveau Creek and on the left limit at the mouth of Beliveau Creek. A total of 26 159 m^3 (20,000 yd^3) was stripped and 85 017 m^3 (65,000 yd^3) was sluiced throughout 2014.

Duncan Creek Golddusters Ltd. operation on Duncan Creek in 2011 (Photo credit: Bill Leary).

Equipment and Water Treatment Equipment on site included a Caterpillar 330BL excavator with a 2 yd bucket, Caterpillar 330DL excavator with a 2 yd bucket, Komatsu D355A bulldozer with a u-blade and ripper, and Caterpillar 769C 35 ton rock truck. The wash plant consists of a Clemro vibrating grizzly feeder with a 4 by 17 ft deck with 0.7" by 1.2" holes, 6 by 10 ft prewash, John Deere Generator, 6 by 9 ft run with 1" angle iron riffles, and 12 by 9 ft run with expanded metal riffles and nomad matting. A 6" Gorman Rupp trash pump powered by a Deutz generator supplied water to the wash plant at 1200 igpm, allowing the plant to process 125 loose cubic yards (96 m^3) of gravel per hour. Process water was acquired from Duncan Creek and effluent was settled out-of-stream in one pond approximately 68 by 46 by 3 m (225 by 150 by 9 ft). Clean-ups were conducted using a two cell jig with a long tom.

Surficial Geology and Stratigraphy The pay unit is on bedrock and consisted of a boulder cobble gravel from 6.1 to 7.6 m (20 to 25 ft) thick with boulders up to 1.8 m (6 ft) in diameter. This unit is likely a glaciofluvial gravel associated with meltwater derived from a former ice margin situated near Keno City. Fine grained overburden, with organic inclusions, overlies the pay unit and is from 6.1 to 7.6 m (20 to 25 ft) thick. All gravel and 0.3 m (1 ft) of bedrock was sluiced. In 2011, the mine cut increased in depth ranging from a minimum of 13.7 m (45 ft) to a maximum of 16.7 m (55 ft). This included a thicker unit of pay and overburden, both up to 9 m (30 ft) thick. In 2012, the first section mined was similar to the 2011 cut stratigraphy and had a maximum depth to bedrock of 18.3 m (60 ft). The 2011 and 2012 exposures are particularly interesting because of their location near the limit of the late Wisconsin McConnell glaciation (~16000 years ago). Lower Duncan Creek was glaciated by ice moving up the valley from the Mayo River valley. As the ice advanced very little erosion occurred, however glacial moraine (till) was deposited on the pre McConnell interglacial Duncan Creek landscape. Mining progressed upstream from the 2011 and 2012 cuts and is currently within tens of metres from the glacial limit. The cut farthest upstream exposes preglacial fluvial deposits, including low bench landforms that are buried by till. In addition, at the top of the section is a thin gravel unit on the till exhibiting an up-valley flow direction. This gravel was deposited by meltwater draining off the margin of the glacier and it contains placer gold. The source of the gold may be from a reworked high-level fluvial placer on the left limit or simply from concentrating till that contains low-grade gold values derived from nearby bedrock sources. The second location mined in 2012 was shallower having a total thickness of 3.0 to 10.7 m (10 to 35 ft). Stratigraphically, the second location was similar to previous exposures mined in lower Duncan Creek, consisting of a boulder-cobble gravel pay unit that is 0.9 to 2.7 m (3 to 9 ft) thick and overburden ranging from 1.5 to 6.1 m (5 to 20 ft) thick. In 2013, mining continued downstream of camp and the exposure consisted of a boulder-cobble gravel pay unit 0.9 to 3.6 m (3 to 12 ft) thick, capped by 1.5 to 9.1 m (5 to 30 ft) of colluviated till overburden for a total depth to bedrock ranging from 3 to 12 m (10 to 49 ft). In 2014, mining again focused downstream of camp on the right limit. Pay consists of a cobble pebble gravel, possibly pre-McConnell Duncan Creek gravel, under till and glaciolacustrine overburden. This overburden stratigraphy is consistent with up-valley flowing ice from the Mayo River. Also mined in this general area is coarse boulder-cobble gravel. This gravel appears to be glacial outwash gravel related to post-glacial maximum down-cutting in the Duncan Creek valley. The high energy stream reworked the pre-McConnell pay gravel, which is now exposed under in situ till on the right limit, and was subsequently buried by colluviating sediments off the right limit. A highly consolidated matrix-rich dark grey till was noted as false bedrock in places suggesting complex bedrock topography and potential for additional buried gravel at depth.

Bedrock Geology Bedrock is muscovite schist, in varying degrees of decomposition.

Gold Characteristics Gold recovered is typically smooth and flat with some rough and rounded pieces. The majority is smaller than screen size 18. Nuggets are typically smooth and occasionally includes quartz. The fineness of gold is 780.

Gold from the Taylor's operation in 2014.

Duncan, a tributary of Mayo River

105M/14 2013: 63°50'16"N, 135°27'43"W

Zeiler, M., 2003-2011, 2013-2014

Water License: PM05-473 (Active 2014)
Water License: PM05-474 (Active 2014)
Active Producer (2010-2011, 2013-2014) **Operation no. 174**

Location Duncan Creek, including tributaries Williams and Parent creeks.

Work History and Mining Cuts Mr. Zeiler conducted exploration on Parent and Williams creeks throughout 2010 and 2011, with no active sluicing. In 2010, Duncan Creek Golddusters Ltd. mined Mr. Zeiler's property from May to July under an option agreement. After an inactive season in 2012, Mr. Zeiler returned to the site in 2013 and conducted a stripping program and tested the left limit of Duncan Creek. In 2014, on the left limit of Parent Creek, material was stripped and tested and exploration occurred on upper Williams Creek.

Equipment and Water Treatment Equipment included a Caterpillar D7 bulldozer and two excavators.

Surficial Geology and Stratigraphy On the left limit of Williams Creek, drill results exposed 1.8 m (6 ft) of gravel and 24 m (80 ft) of blue silty clay.

Mr. Zeiler at his base camp in 2013.

Mr. Zeiler's operation on Duncan Creek in 2011 (Photo credit: Bill Leary).

Bedrock Geology Bedrock is interbedded quartzite and muscovite schist, in varying degrees of decomposition.

Exploration Potential Air photo interpretation of Parent Creek shows that the drainage is offset to the left limit by glacial overburden. Pre-Reid interglacial gravel is likely present under the Reid glacial overburden in the middle of the valley. Drill testing is recommended.

Gold Characteristics Gold recovered from Duncan Creek is flat and primarily very fine. The largest nugget recovered is 1 oz. The largestnugget recovered from Parent Creek is 1/2 oz and from Williams Creek 1/3 oz.

Thunder Gulch, a tributary of Duncan

105M/14 2014: 63°54'30" N, 135°15'18"W

Bardusan Placers Ltd., 1991-1992, 1998-2012, 2014

Water License: PM13-055 (Active 2024)

Active Producer (2010-2012, 2014) **Operation no. 175**

Location Thunder Gulch.

Work History and Mining Cuts From 2010 to 2012, Bardusan Placers Ltd. operated a daily eight to ten hour shift with three miners. In 2010, they were active on Lightning Creek and Thunder Gulch with two cuts on Lightning Creek, 3 km upstream of Keno City measuring 20 by 30 by 23 m (66 by 98 by 75 ft) and 20 by 35 by 22 m (66 by 115 by 72 ft). Another cut was mined in 2010 on Thunder Gulch that measured 20 by 40 by 22 m (66 by 131 by 72 ft). The right limit of Thunder Gulch, approximately 46 m (150 ft) from its confluence with Lighting Creek was mined in 2011 and included two cuts that measured 30 by 45 by 20 m (98 by 148 by 66 ft) and 30 by 50 by 25 m (98 by 164 by 82 ft). Two cuts were mined in 2012 on Thunder Gulch, approximately 250 m (820 ft) upstream from its confluence with Lightning Creek. The cuts measured 30 by 40 by 24 m (98 by 131 by 79 ft) and 25 by 35 by 22 m (82 by 115 by 72 ft). Activity in 2014 occurred on Thunder Gulch at the upper canyon, progressively mining upstream throughout the season. Two long cuts were mined, and the tailings were distributed to develop the settling ponds. A total of approximately 30,000 to 35,000 yd^3 (22937 to 26769 m^3) was sluiced and similar yardage was stripped.

Equipment and Water Treatment Equipment present on site included a Hitachi 450 excavator to strip and stock pile pay, Caterpillar 980C front end loader to feed the sluice plant, one Caterpillar 988B front end loader to strip and move tailings. The wash plant consisted of a 10 by 20 ft derocker screen deck which fed three stacked sluice runs, with flat bar riffles in the upper run and 1" angle iron riffles

Bardusan Placers Ltd. actively mining in 2014 on upper Thunder Gulch.

and expanded metal in the lower two runs. Depending on material, the Derocker was able to process 70 to 90 loose cubic yards (53 to 69 m^3) per hour. In 2011 and 2012, water was acquired from Thunder Gulch at 1500 igpm by a 6" Deutz powered volume pump. Water was discharged through the previous year's coarse tailings roughly 20 by 300 m (66 by 984 ft) and then into a primary pond that measured 40 by 22 by 1 m (131 by 72 by 3.3 ft). A secondary pond 40 by 20 by 2 m (131 by 66 by 6.6 ft) was used 0.5 km (1,640 ft) downstream on the left limit of Lightning Creek. Clean-ups were conducted using a long tom to concentrate, a magnet to isolate the magnetics, and the concentrate was melted into a doré bar.

Surficial Geology and Stratigraphy The stream gravel mined in 2010 consisted of 50% pebble gravel and 50% cobble-boulder gravel with an oxidized matrix. The lower 6 to 9 m (20 to 30 ft) was sluiced. Mining cuts exposed on the right limit of Thunder Gulch consist of boulder-dominated outwash gravel, overlying a clay-rich diamicton. Pay zone is considered 5 to 12 m (16 to 39 ft) of the lower gravel and 1 m (3.3 ft) of bedrock. In 2014 on Thunder Gulch, 3 to 4 m (9.8 to 13.1 ft) of material above bedrock was mined from virgin ground, and 1 m (3.3 ft) of gravel and 0.7 to 1.3 m (2.3 to 4.3 ft) of bedrock in previously mined sections.

Bedrock Geology Bedrock varies between shale, quartzite, and schist.

Gold Characteristics Gold recovered is bright with slight red staining, angular, flat, and round with 10% greater than size 6 mesh. The fineness of the gold is 780 to 800.

Hope Gulch, a tributary of Lightning

105M/14 2013: 63°55'12"N, 135°12'08"W

Roy, L., 2008-2013

Water License: PM07-564 (Active 2018)
Active Producer (2010-2013) **Operation no. 175**

Location Hope Gulch, 0.5 km from its confluence with Lightning Creek.

Work History and Mining Cuts Mr. Roy operated a small scale operation on Hope Gulch, primarily hand mining. In 2011, he mined a small left limit cut and continued to mine upstream throughout 2012 and 2013.

Equipment and Water Treatment Equipment present on site included a screen Derocker and a small sluice box.

Surficial Geology and Stratigraphy The exposure on the left limit consists of 0 to 0.7 m (2.3 ft) of stratified, fining upward, pebble-cobble gravel, with 60% silty, sand matrix. From 0.7 to 5.5 m (2.3 to 18.0 ft) is a clast-supported, poorly sorted, massive gravel with boulders up to 1 m (3.3 ft).

Bedrock Geology Bedrock is shale and quartzite (Roots, 1997).

Gold Characteristics Not reported.

Hope Gulch in 2011 (Photo credit: Bill Leary).

Granite, a tributary of Granite

105M/14 2014: 63°51'09"N, 135°03'50"W

Davies, J., 2014
Sjogren, L., 2012-2013

Water License: PM12-012-1 (Active 2022)
Active Producer (2013-2014) **Operation no. 176**

Location Granite Creek, headwaters.

Work History and Mining Cuts Mr. Davies purchased the ground from Mr. Sjogren, and 2014 was their first active year. Reworked, concentrated material and an end moraine on upper Granite Creek were mined.

Equipment and Water Treatment Equipment present is 2014 included a Hitachi 450 excavator, Caterpillar 966 wheel loader, and Caterpillar D6 and D7 bulldozers. The wash plant consisted of a derocker with a single sluice and was fed by a 10" pump.

Surficial Geology and Stratigraphy During the last glaciation, local alpine glaciers formed on the north side of Mount Hinton at the headwaters of Granite Creek. The glacier advanced to the confluence with the main valley that drains eastward out of the Gustavus Range and formed a succession of large end moraines. Following the glaciation, the end moraines were dissected by Granite Creek. The morainal sediment was subsequently concentrated in the modern stream.

Bedrock Geology Bedrock is shale and quartzite (Roots, 1997).

Gold Characteristics Gold is angular.

Curly, a tributary of Mayo River

105M/14 2014: 63°45'12"N, 135°29'20"W

Plut, F., 2014

Water License: PM07-575 (Active 2017)
Active Producer (2014) **Operation no. 178**

Location Curly Creek.

Work History and Mining Cuts First year of recorded activity was in 2014. Mr. White stripped an area on the right and left limit on behalf of Mr. Plut, and conducted extensive testing.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is shale and quartzite (Roots, 1997).

Gold Characteristics Not reported.

Mr. Sjogren's operation on Granite Creek in 2013 (Photo credit: Bill Leary).

Davidson, a tributary of Mayo River

105M/11 2013: 63°44'45"N, 135°25'26"W

Rivest, P., 2003-2010, 2012-2014

Water License: PM03-341 (Active 2014)
Water License: PM14-005 (Active 2024)
Active Producer (2010, 2012-2014) **Operation no. 179**

Location Davidson Creek, approximately 4 km upstream from its confluence with Mayo River.

Work History and Mining Cuts The option between Mr. Klippert and Mr. Rivest was completed in 2010 and the optioned claims returned to Mr. Rivest. No recorded activity is available for 2011. In 2012, Mr. White was permitted to operate on Davidson Creek, where he conducted exploration immediately upstream of the canyon on the right limit. Material from a 110 by 73 m (360 by 240 ft) cut on the left limit bench above the canyon was sluiced. In 2013, Mr. White continued to mine the right limit of the canyon on Davidson Creek, where pay was hauled to a sluice plant upstream of the canyon. The option agreement between Mr. Rivest and Mr. White continued throughout 2013, with Mr. White actively mining in two locations. In 2014, mining continued in the canyon, similar to 2013, and upstream of the canyon on the left limit.

Equipment and Water Treatment Equipment in 2014 included four excavators, two bulldozers, and two rock trucks. The wash plant located above the canyon was a trommel.

Surficial Geology and Stratigraphy Davidson Creek is a narrow valley containing coarse boulder gravel deposits. The exposure on a right limit bench from 2013 consists of 9 m (30 ft) of interbedded boulder-cobble gravel with a silty diamict, moderately oxidized cobble gravel, and minor silty sand lenses.

Bedrock Geology Bedrock is phyllite.

Gold Characteristics Not reported.

Ping Pong, a tributary of Mayo Lake

105M/14 2014: 63°47'21"N, 135°20'33"W

Ping Pong Mining, 2014

Water License: PM04-398 (Active 2014)
Active Producer (2014) **Operation no. 180**

Location Ping Pong Creek, tributary on the northwestern shore of Mayo Lake.

Work History and Mining Cuts Mr. Pavlovich operated under S. Wissner's license in 2014. A small scale testing program was conducted on the left limit of Ping Pong Creek on the upstream side of the trail to Keystone Creek.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is phyllite and shale (Roots, 1997).

Gold Characteristics Not reported.

Unnamed, a tributary of Mayo Lake

105M/14 2013: 63°45'32"N, 135°12'02"W

Wozniak, M., 2005-2013

Water License: PM04-366 (Active 2014)
Active Producer (2010-2013) **Operation no. 181**

Location Unnamed tributary on the south shore of Mayo Lake, 1.4 km east of Dawn Gulch.

Work History and Mining Cuts No detailed work history is documented for 2010 and 2013, although the operator was present on site. In 2011, Mr. Wozniak continued to develop the left limit of the unnamed tributary below the canyon and approximately 1 km upstream from the lakeshore. Activity in 2012 consisted of reclamation.

Equipment and Water Treatment In 2011, an excavator was the only equipment working on site. The settling ponds were located adjacent to the camp near the lakeshore.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is phyllite, shale, sandstone, grit, conglomerate, and limestone (Roots, 1997).

Gold Characteristics Not reported.

Active operation on Davidson Creek, above the canyon, in 2012 (Photo credit: Bill Leary).

Owl, a tributary of Mayo Lake

105M/11 2013: 63°44'59"N, 135°07'23"W

Barchen, R., 2001-2013

Water License: PM03-351 (Active 2014)
Active Producer (2010-2013) **Operation no. 182**

Location Owl Creek, on the south shore of Mayo Lake.

Work History and Mining Cuts Minimal information is documented on Mr. Barchen's operation from 2010 to 2013. In 2010, an upstream cut was stripped. Reclamation work and equipment maintenance was conducted in 2011 with continued reclamation throughout 2012 and 2013.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is phyllite and shale (Roots, 1997).

Gold Characteristics Not reported.

Downstream view of Owl Creek in 2011 (Photo credit: Bill Leary).

2012 activity on Mr. Wozniak's operation on unnamed tributary of Mayo Lake (Photo credit: Bill Leary).

Anderson, a tributary of Mayo Lake

105M/11 2013: 63°43'49"N, 135°01'33"W

Aurora Mines Inc., 2001-2003, 2007-2013

Water License: PM04-387 (Active 2014)
Active Producer (2010-2013) **Operation no. 183**

Location Anderson Creek, on the south shore of Mayo Lake.

Work History and Mining Cuts The operation was indicated as active in 2010 but no specific details were reported. Sluicing occurred in 2011 and 2012 and an exploration cut was exposed on the lower right limit of Anderson Creek. A right limit deposit upstream of the canyon was monitored and mined in 2012. Reclamation and mining occurred in 2013.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is phyllite, shale, sandstone, grit, conglomerate, and limestone (Roots, 1997).

Gold Characteristics Not reported.

Aurora Mines Inc. operation on Anderson Creek in 2012 (Photo credit: Bill Leary).

BIG CREEK
PLACER AREA

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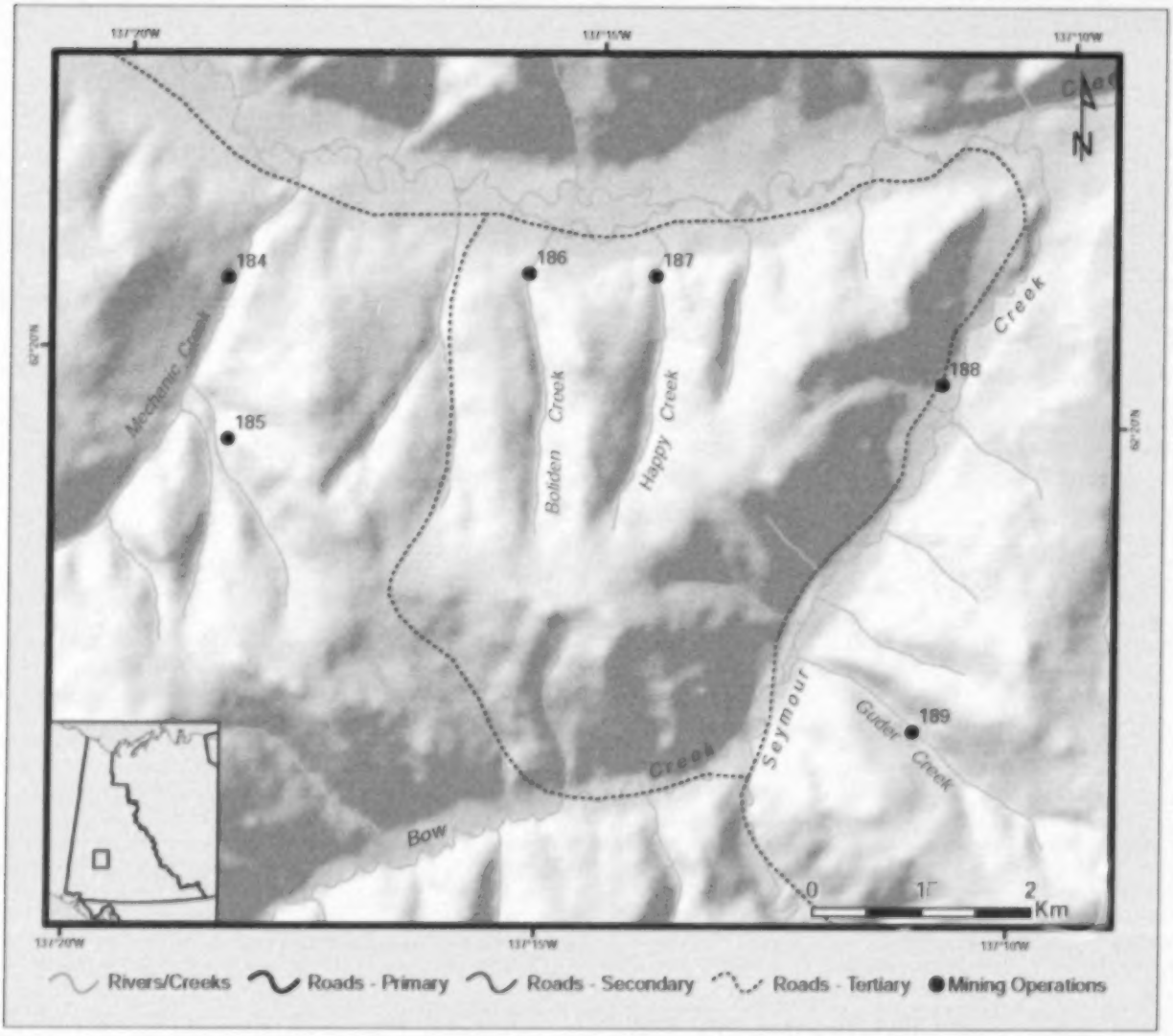


LEGEND

184 ..... Right Fork Mining
185 ..... Darling, W.
186 ..... Ward, M.
187 ..... Acker, D.
188 ..... Fehr, H.
189 ..... Dodge, D.

Mechanic, a tributary of Big

115I/06 2010: 62°20'24"N, 137°18'48"W

Right Fork Mining, 2000-2014

Water License: PM03-347 (Active 2014)
Active Producer (2010-2014) **Operation no. 184**

Location Mechanic Creek, lower.

Work History and Mining Cuts In 2010, a new cut was mined on the left limit within the upper five claims under PM03-347on Mechanic Creek. Aside from active sluicing, no specific work history is recorded for 2011. Sluicing and stockpiling material occurred in 2012, and the last cut of the season was located on the right limit. The operator was active in 2013 but no mining details are known. In 2014 there were 3 miners and a cook working a single shift daily.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy In 2014 the Gows were mining past a right limit fluvial fan from a small tributary. The section consists of a matrix supported, imbricated pebble-cobble pay gravel that is overlain by interbedded organic layers, angular tributary gravel, and Mechanic Creek gravel. Over the last few years the Gows have noticed that the valley bottom gravel units have been thinning as they progressed upstream.

Bedrock Geology Bedrock is a partially decomposed quartz-feldspar porphyry with abundant quartz veinlets.

Gold Characteristics The fineness ranges from 870 to 900.

Mechanic, a tributary of Big

115I/06 2010: 62°19'37"N, 137°18'40"W

Darling, W., 2001-2010

Water License: PM00-195 (Expired 2010)
Water License: PM10-014 (Active 2020)
Active Producer (2010) **Operation no. 185**

Location Unnamed right limit tributary of Mechanic Creek, approximately 2.6 km upstream from the mouth of Mechanic Creek.

Work History and Mining Cuts The right limit tributary of the unnamed creek was mined in 2010. Status is unknown from 2011 to 2013.

Equipment and Water Treatment The operator uses an out-of-stream settling system with 100% recycling.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock exposed consists of a granodiorite with disseminations and stringers of pyrite.

Gold Characteristics In 2008, the gold was fine grained and angular in character, with rare wires and attached quartz.

Boliden, a tributary of Big

115I/06 2009: 62°20'32"N, 137°15'37"W

Ward, M., 1999-2013

Water License: PM04-391 (Active 2015)
Active Producer (2010-2013) **Operation no. 186**

Location Boliden Creek, a tributary of Big Creek located between Revenue and Happy creeks.

Work History and Mining Cuts A stripping program was conducted in 2010 at the upper end of the claims. Ground was also worked on the bottom claims where several test holes were dug to a depth of approximately 5.4 m (18 ft). In 2011, some sluicing occurred and a new cut was opened on the lower end of Boliden Creek where test pits were dug the previous season. The operation was active in 2012 and 2013, but no work history is known.

Equipment and Water Treatment The only equipment recorded during the 2010-2013 period is an excavator used to strip material from upper Boliden Creek in 2010.

Surficial Geology and Stratigraphy The surficial geology in 2009 consisted of 0.6 to 3 m (2 to 10 ft) of muck and colluvium (slide rock) overlying 0.6 to 3 m (2 to 10 ft) of mixed angular and rounded gravel. All of the gravel and 30 cm (1 ft) of bedrock was mined.

Bedrock Geology Bedrock at upper Boliden Creek is quartz monzonite, granite, monzonite, and syenite, whereas amphibolite, quartz-mica-schist, and phyllite are found in the lower reaches (Tempelman-Kluit, 1984).

Gold Characteristics Not reported.

Happy, a tributary of Big

115I/06 2009: 62°20'34"N, 137°14'16"W

Acker, D., 1998-2003, 2005-2006, 2008-2013

Water License: PM03-343 (Active 2013)
Active Producer (2010-2013) **Operation no. 187**

Location Happy Creek, a tributary of Big Creek.

Work History and Mining Cuts Mr. Acker was present on site from 2010 to 2013 but the extent of his activity is unknown. Mr. Acker passed away in October 2013, after mining in Yukon for several decades.

Equipment and Water Treatment Several types and sizes of equipment have been utilized at this operation. A bulldozer was used to strip overburden and to push pay gravel, and a loader was used to feed the trommel. Water was obtained primarily by recirculation from the final settling pond.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock consists of granite and decomposed schist.

Gold Characteristics Not reported.

Seymour, a tributary of Big

115I/06 2014: 62°20'09"N, 137°11'08"W

Fehr, H., 2012-2014

Water License: PM08-627 (Active 2019)
Active Producer (2010-2014) **Operation no. 188**

Location Seymour Creek, a tributary of Big Creek.

Work History and Mining Cuts A lease agreement was established allowing Mr. Fehr to operate on Mr. Harris's ground. Mr. Fehr operated on the left limit floodplain deposit of Seymour Creek. In 2013 he excavated a 13 by 37 m (43 by 121 ft) test pit. The depth to bedrock was 5 m (16 ft). Minimal work was conducted in 2014.

Equipment and Water Treatment Equipment on site in 2010 included a Cat 235 excavator and a Terex bull dozer. The wash plant utilized a vibrating 3/4" punch plate screen that fed two 4 by 12 ft sluice runs containing expanded metal and nomad matting.

Surficial Geology and Stratigraphy The floodplain deposit of Seymour Creek consists of a sorted coarse gravel with subrounded to rounded clasts.

Bedrock Geology Bedrock is granodiorite.

Gold Characteristics Gold grain size increases towards the left limit bank.

Guder, a tributary of Seymour

115I/06 2014: 62°18'27"N, 137°11'09"W

Dodge, D., I. and F. 2013-2014

Water License: PM12-024 (Active 2022)
Active Producer (2013-2014) **Operation no. 189**

Location Guder Creek, tributary to Seymour Creek, 0.9 km downstream from Bow Creek.

Work History and Mining Cuts Work was completed by 4 miners during a daily 10-12 hour shift. An estimated total of 20,000 yd^3 (15400 m^3) of pay was processed in the 2014 season. The upper cut in 2014 measured 83 m (272 ft) by an average width of 23 m (77 ft). The sluiced section was 2.4 m (8 ft) thick and amounted to 7700 loose cubic yards processed.

Equipment and Water Treatment Equipment used in the 2014 season included a Komatsu PC400 excavator with a 3.0 yd^3 bucket for digging pay and stripping, a Caterpillar D8L to push pay, a Komatsu 328 excavator for feeding the derocker, and a Volvo L180E loader used to haul tailings. The wash plant consisted of a Derocker with 2" openings that fed a 3 by 13 ft sluice run with angle iron riffles aimed at targeting coarse gold. This initial sluice run fed a 3/16" overhead concentric screen deck that split the flow into two 3 by 25 ft sluice runs containing three configurations of expanded metal and two types of carpet. The oversized material off the screen deck was stacked with 40 ft J&M conveyor. The plant capacity is 70 loose cubic yards (54 m^3) per hour and has water requirements of 600-700 igpm. Water is recirculated and settled through two in-stream settling ponds. Clean ups were completed using an Enhancer 755X, two cell jig and long tom, and an Xtruder 255 table constructed by MSI Mining Equipment.

Surficial Geology and Stratigraphy Guder Creek is a narrow valley that was last glaciated prior to the Reid glaciation (>250000 years ago). Subtle erosional nicks and lineations on the valley sides are visible on air photographs and indicate that ice moved up Guder Creek from Seymour Creek valley. Evidence of this glaciation is present in the valley bottom stratigraphy where glacial erratics are present. The limit of glaciation likely reached the back of the valley, however glaciers did not over top the local summits that bound the valley. In 2014, mining initially focused on the

left limit where the overburden is thinnest and progressed upstream where a wider cut was feasible. Much of the right limit pay gravel is overlain by stripped material and weathered bedrock colluvium. The stratigraphic section on the right limit consists of 2.2 m (7.5 ft) of poorly sorted cobble-boulder gulch gravel with angular to subrounded boulders on bedrock. This unit is composed of approximately 70% clasts and 30% silty coarse sand matrix and is the pay gravel. Overlying the pay is 30 cm (1 ft) of buried soil consisting of silty fine sand, angular clasts, and minor organics. This soil unit is continuous along the right limit section. Deposited on the soil is 2 m (7 ft) of weathered bedrock colluvium (slide rock) that varies from being clast supported and slightly washed to matrix supported and dense. This unit represents the toe of a sediment apron and thickens towards the right limit valley margin.

A view of the wash plant used on Guder Creek in 2014. The plant was processing 70 loose cubic yards per hour.

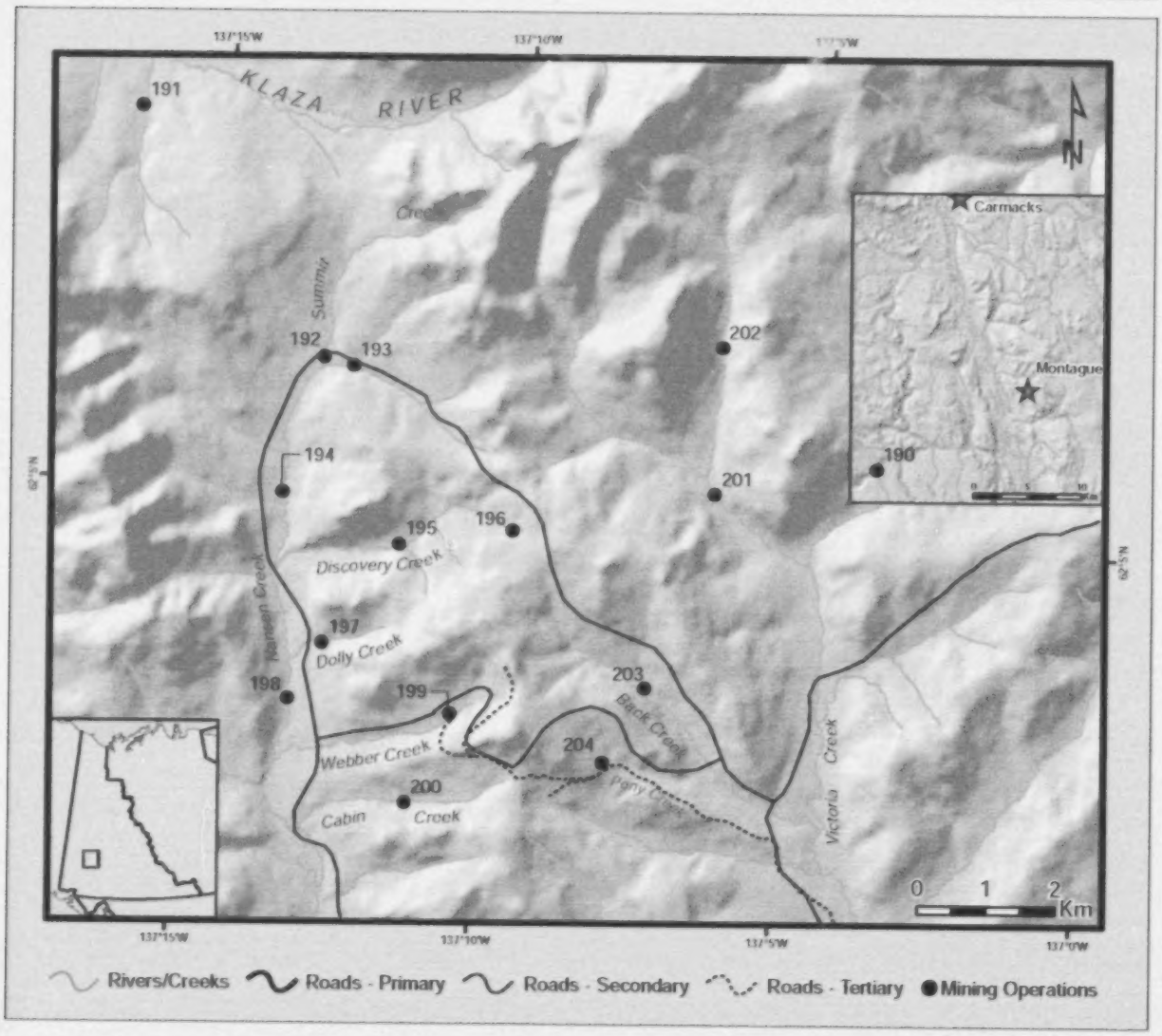
Bedrock Geology The following bedrock geology description is derived from Northern Freegold Resources (2014). Guder Creek valley is located within a prominent structural feature that is interpreted as a splay of the Big Creek fault zone. High-grade gold mineralization associated with the Irene showing, was visible at the base of the 2014 placer cuts. The general rock units consist of light grey to white metasedimentary rock, a buff white quartz-feldspar porphyry, and a medium-grained biotite granodiorite. Mineralization occurs at the fault contact between metasedimentary rock and granodiorite, and in brittle shear zones that parallel Guder Creek.

View looking downstream of the 2014 cut on Guder Creek. Unaltered granodiorite is exposed in the foreground whereas a highly altered contact zone is visible further downstream. The pay unit includes the lower 2.2 m (7.5 ft) visible in the section on the right hand side of the photograph (right limit). The overlying units are primarily colluviated weathered bedrock (slide rock).

Gold Characteristics A mixture of nuggets and fine gold are present in Guder Creek. Nugget shape is generally subangular to angular with abundant wire gold present in the smaller nugget fraction. Native gold nuggets may have a component of magnetite or quartz. Coarse magnetite is common.

NANSEN
PLACER AREA

SITES 190 - 204



LEGEND

190 ..... Diamond Tooth Resources Inc.
191 ..... Canaan Gold Resources Inc.
192 ..... Pishon Gold Resources Inc.
193 ..... 38241 Yukon Inc.
194 ..... Johnson Exploration
195 ..... Smith, G.
196 ..... Marshall, C.
197 ..... Crawford and Marchand
198 ..... Chaschin, K
199 ..... Orotec International Ltd.
200 ..... Berdahl, R.
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202 ..... Aley, R.
203 ..... 38857 Yukon Inc.
204 ..... Tulk, G.

Incised, a tributary of Rowlinson

115H/16 2014: 61°51'32"N, 136°23'22"W

Diamond Tooth Resources Inc., 2007-2014

Water License: PM04-391 (Active 2015)
Prospect (2007-2014) **Operation no. 190**

Location Incised Creek (also referred to as Florence Creek), a tributary of Rowlinson Creek located southwest of Carmacks.

Work History and Mining Cuts Mr. Brown has been exploring Incised Creek intermittently for more than 7 years. In 2014 Mr. Brown and Mr. Sawrenko worked a single shift daily and conducted an excavator trenching, test pitting, and sluicing program in partnership with the Yukon Mineral Exploration Program. The exploration focused on the lowest level left limit terrace in the valley, however test pits were also dug on high level and intermediate level terraces on the left limit.

Equipment and Water Treatment In 2014, a Kubota 121 3 excavator was used for test pitting, trenching, and feeding a #10 Gold Machine. The #10 Gold Machine processed 2 yd per hour and obtained water from Incised Creek. Discharge water was settled out of stream.

Surficial Geology and Stratigraphy The evolution of Incised Creek is tied closely to the glacial history of the region. During the glaciation the Cordilleran ice sheet overtopped the drainage in its advance to the northwest. Upon recession of the ice sheet, significant meltwater drained down the valley and eroded and reworked, the glacial moraine sediment. Numerous flights of terraces formed during this incision and provide targets for exploration. The lowest level terraces were cut into bedrock, including the modern channel. These lowest terraces and the modern floodplain are the primary target in the valley. Numerous boulders are present on the surface of the lowest terrace and suggest a high energy, possibly catastrophic flood impacted the drainage, likely during deglaciation. Gold and platinum are distributed throughout the terrace gravel, however are most concentrated near the bedrock interface. The stratigraphy of the lowest terrace gravel consists of 2.2 m (5 ft) of poorly sorted pebble cobble gravel with a

Aerial view of Mr. Brown's exploration operation on Incised (Florence) Creek in 2014.

A trench exposure of the gravel in the lowest terrace of Incised Creek. Granitic bedrock is near the base of the cut and Mr. Brown is sluicing a pebble cobble dominant gravel below the near surface boulder gravel.

matrix of granules and silty sand on decomposed granite. Overlying the gravel on bedrock, and forming the surface of the terrace is 2.2 to 3 m (5 – 10 ft) of very coarse boulder gravel. The boulder gravel contains between 40 and 70% boulders whereas the remaining sediment consists of cobbles, minor pebbles, and a matrix of silty coarse sand. The maximum boulder size observed was 80 by 170 cm.

Bedrock Geology Bedrock in Mr. Brown's cut and outcropping along the river is a brown weathering granite, which is part of the early Jurassic Aishihik batholith suite.

Gold Characteristics Gold and platinum are present as both separate grains or combined within a single grain. The amount of platinum seems to vary between test pits and ranges from 5 to 40% of the precious metal content. The size distribution of gold and platinum grains according to a 1 yd sample from the bedrock contact on the lowest terrace was 7% > 20 mesh, 25% 20-30 mesh, 50% 30-50 mesh, 13% 50-100 mesh, and 5% <100 mesh. The gold and platinum grains have a modified to reshaped character.

Unnamed Left Limit, a tributary of Klaza

115I/03 2014: 62°07'54"N, 137°16'29"W

Canaan Gold Resources Inc., 2009-2014

Water License: PM09-665 (Active 2019)

Active Producer (2010-2014) **Operation no. 191**

Location Unnamed left limit tributary in the headwaters of Klaza River.

Work History and Mining Cuts No work history information is recorded for 2011 and 2013, although activity under PM09-665 did occur in those years. In 2014, there was an 8 man crew working two 10 hour shifts.

Equipment and Water Treatment Equipment on site included four excavators (a Caterpillar 325B, Hitachi EX 270, Hitachi 200LC, and Case 125B), one H100 International loader, and one Caterpillar D9N bulldozer. The wash plant consists of a 40 ft (12 m) trommel that screens to 3/4" into a single sluice run. The upper sluice run has expanded metal

and measures 18" by 8 ft whereas the lower run measures 4 by 10 ft and is lined with expanded metal, angle iron riffles, and Nomad matting. Water was acquired from the creek and 90% was recycled from three settling ponds.

Surficial Geology and Stratigraphy In 2014, the stratigraphy was best exposed on the left limit where development is currently focused. Mining appears to focus on a yellow-brown cohesive boulder-clay diamict that acts as a false bedrock. Unit 1 is interpreted as pre-Reid till from either the Klaza River or the immediate tributary. Unit 2 is 1.5 m (5 ft) thick and consists of a cohesive, grey-black, cobble-clay diamict with minor organics. The clasts in unit 2 are primarily angular, unweathered granodiorite. Unit 2 is interpreted as a colluviated pre-Reid till. Unit 3 is 1 m (3 ft) thick and consists of oxidized, decomposed igneous rock. This unit is interpreted as colluvium or slide rock from the valley side. No permafrost issues were reported and all mining appears to focus on near surface deposits. A gravel channel that rest stratigraphically on unit 1 was exposed on the ramp wall. The gravel was described as a poorly sorted, angular, pebble-cobble gravel.

Bedrock Geology Bedrock is granodiorite and quartz diorite (Templeman-Kluit, 1984).

Gold Characteristics Not reported.

Nansen, a tributary of Nisling

115I/03 2013: 62°06'05"N, 137°13'07"W

Pishon Gold Resources Inc., 2005-2014

Water License: PM06-529 (Active 2017)

Active Producer (2010-2014) **Operation no. 192**

Location Upper Nansen Creek and its tributary, Summit Creek.

Work History and Mining Cuts A cut against the left limit of Nansen Creek valley was mined in 2010, while no specific mining location was reported in 2011. Sluicing occurred at the mouth of Summit Creek in 2012 and mining continued upstream throughout 2013. In 2014, mining initially focused on re-running 2013 tailings using a new processing plant. Later in the 2014 season, mining focused on the right limit of Summit Creek near the Nansen Creek valley. A total of 6 miners worked a single daily shift. In 2014, the total sluiced material was estimated to be 30 582 m^3 (40,000 yd^3).

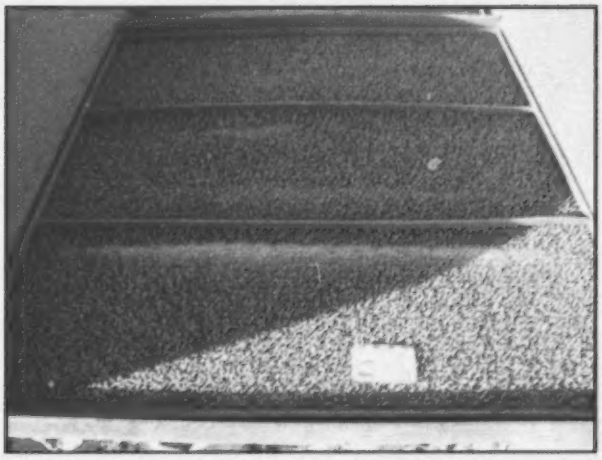
Equipment and Water Treatment Pishon Gold Resources tested a new plant including dual centrifuges to capture their fine gold. The plant consisted of a dump box followed by a three-phase, vibrating, classification deck that includes a grizzly with 3 cm (1") openings and two polyurethane screens that classify to <15 mm (0.6") and <5 mm (0.2").

Canaan Gold Resources Inc. wash plant in 2012. (Photo credit: Steve Beaulieu).

Material <5 mm is then split and fed into two 80 cm (31") diameter Chinese-built centrifuges. The centrifuges are similar to a Nelson and capable of processing 50 tonnes per hour using a 20 hp engine. The two centrifuges operate at 480 rpm and can capture gold as small as 10 microns. It was found that the polyurethane screens were too thick and sediment plugged up the openings. Gold recovery within the centrifuges was also problematic and further classification was required for optimization. The plant was reconfigured with a 1/2" metal screen on the vibrating deck and a single 4 ft by 15 ft sluice run. The sluice run was lined with expanded metal and Chinese matting that features a thicker profile enabling better water movement through the mat. A Cat D8L was used for stripping and pushing pay, which was subsequently loaded onto a Caterpillar D400D haul truck using a Hitachi Zaxis 330 excavator. A Hitachi 270 LC excavator was used for feeding the plant and a Caterpillar 988B loader removed tailings.

Surficial Geology and Stratigraphy A right limit cut at the mouth of Summit Creek exposes a complex stratigraphy of glacial and non-glacial sediment. The mine cut did not expose bedrock and much of the sluicing focused on the upper units of the stratigraphy. Unit 1, at the base of the cut, consists of 4.5 m (15 ft) of coarse cobble-boulder gravel that fines upward into a poorly sorted, pebble-rich gravel. There are many foreign subrounded clast lithologies in this unit and it is interpreted as a glacial outwash gravel related to an up-valley flowing glacier in Nansen Creek. The fining upward texture suggests this unit may have been deposited in an ice marginal position during ice retreat down Nansen Creek valley. Overlying unit 1 is 2 m (6.5 ft) of compact cobble-boulder-clay (diamict) sediment containing subangular polished clasts. Unit 2 is interpreted as a glacial ground moraine deposit or till deposited from a local alpine pre-Reid glacier in Summit Creek. The till texture changes from being more silt-rich at the bottom to clast-rich at the top, which is interpreted as a change from basal till to meltout or ablation till. Unit 3 is 1.2 m (4 ft) thick and is a moderately sorted, clast-dominant, angular, pebble-cobble gravel. There is a crude imbrication to the clasts that show a southward flow. In places this fluvial unit has an erosional lower contact and cuts into the underlying till. The channel cut and fill feature contains silty organic beds and gravel. Unit 3 is interpreted

Processing plant operated by Pishon Gold Resources on upper Nansen Creek.



A close up photo of the matting used by Pishon Gold Resources in upper Nansen Creek drainage. The matting has a relatively thick profile, approximately 2 cm, and is effective at trapping the fine gold.

as an interglacial fluvial gravel originating from Summit Creek. Unit 4 consists of 1.2 m (4 ft) of slopewash colluvium containing sand, silt, organics, and White River tephra. Placer gold within the section is contained within units 2 and 3, which both originate from the Summit Creek basin.

Exploration Potential A pre-glacial placer deposit from Summit Creek or upper Nansen Creek may be preserved under the pre-Reid glacial sediment exposed at the base of the cut. The depth to bedrock is unknown at the mouth of Summit Creek.

Bedrock Geology Bedrock is granodiorite and quartz diorite (Templeman-Kluit, 1984).

Gold Characteristics The gold in Summit Creek and this section of upper Nansen Creek is mostly fine (125 to 500 microns).

Nansen, a tributary of Nisling

115I/03 2013: 62°06'02"N, 137°12'37"W

38241 Yukon Inc., 2013-2014

Water License: PM12-027 (Active 2017)
Active Producer (2013-2014) **Operation no. 193**

Location East fork of Nansen Creek.

Work History and Mining Cuts The first season of mining for 38241 Yukon Inc. was in 2013. Mining occurred at the mouth of an unnamed right limit tributary, approximately 500 m up the east fork of Nansen Creek. Mining continued in 2014 but work history is unknown.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartz monzonite, granite, alaskite, and granodiorite (Templeman-Kluit, 1984).

Gold Characteristics Not reported.

Nansen, a tributary of Nisling

115I/03 2013: 62°05'01"N, 137°13'38"W

Johnson Exploration, 1994-2014

Water License: PM04-449 (Active 2015)
Active Producer (2010-2014) **Operation no. 194**

Location Nansen Creek, 1 km upstream from the mouth of Discovery Creek.

Work History and Mining Cuts Johnson Exploration was active throughout 2010 and sluiced 9939 m^3 (13,000 yd^3) by the beginning of August. In 2011 and 2012, no specific details are recorded other than active mining. Exploration drilling and sluicing occurred in 2013. In 2014, the Johnson brothers mined near the upper end of their claim block and estimated sluicing 30 582 m^3 (40,000 yd^3).

Equipment and Water Treatment They operate a two man crew using two Caterpillar excavators (a 245 with a 4.0 yd^3 bucket and a Cat 235B with a 3.0 yd^3 bucket) for stripping and stockpiling pay. A Caterpillar 988B with a 9.0 yd^3 bucket delivered pay to the sluice plant and a Caterpillar 980C with a 6.0 yd^3 bucket removed tailings. The wash plant consisted of a grizzly dump box with 9" spacing, a 30 ft long trommel with 6 ft of 1" square screen. Two 36" by 36 ft sluice runs included two 10 ft "live bottom" boxes. The sluice runs were lined with 2" expanded metal, angle iron, and Nomad matting. The Gorman Rupp pump capable of 1000 igpm is powered by a Cummins diesel and supplied enough water to process 90 to 100 loose cubic yards (76.5 m^3) per hour. The total number of hours sluiced per season averages between 225 and 250 hours. Water for sluicing was acquired from Nansen Creek, settled out of stream in a 73 by 40 m settling pond and discharged to Nansen Creek without recycling.

Surficial Geology and Stratigraphy For many years the Johnson's have been systematically mining near surface Nansen Creek fluvial gravel. In 2014, the cut width equaled

54 m and, according to the Johnson's, may have been too wide. The main pay channel meanders within the valley bottom and this makes it challenging to avoid the lean limits where the boulder clay false bedrock rises, particularly on the left limit. The total thickness of mined material is 3 to 4 m and the bottom 1.2 to 1.5 m (4 to 5 ft) is considered pay. Unit 1 in the stratigraphic section consists of a green to grey basal till false bedrock. The matrix of the false bedrock is very fine, which makes the till quite compact and difficult to excavate. Unit 2 is 0.9 m (3 ft) thick and consists of tan to green, silty, sandy, pebble-cobble gravel. Unit 2 is the primary pay gravel and gold concentrations are best at the base. Elevated pay values are associated with depressions in the false bedrock surface. Unit 3 is up to 0.9 m (3 ft) thick and is an oxidized (red) gravel that also contains some pay. Unit 4 is a 1 to 2 m (3 to 6 ft) thick, clast-dominated, angular gravel which is overlain by 0.6 m (2 ft) of organics.

Bedrock Geology Bedrock is andesite, dacite, breccia, tuffs, rhyolite, and porphyry (Templeman Kluit, 1984).

Exploration Potential The presence of placer gold on a false bedrock of basal till suggests the current pay gravel and gold accumulation developed after the last glaciation to affect this drainage. The age of that glaciation is unknown, however, it is greater than 250000 years ago (pre-Reid) and may be more than 1000000 years old. The time since the glaciation was long enough to allow a new placer deposit to form through additions from valley-side weathered bedrock colluvium. This may account for the small gold grains (30 mesh) within the modern pay.

The fine-grained nature and abundance of foreign clasts in the basal till false bedrock suggests the pre-Reid glacier responsible for its deposition was advancing up-valley from the Nisling River. This is supported by up-valley trending meltwater channels on the valley side above Nansen Creek near its confluence with the Nisling River. Up-valley flowing ice would have dammed Nansen Creek valley and caused a protective layer of fine-grained glacial lake sediment to be deposited on the pre-glacial fluvial deposits. As the ice thickened and advanced over a glacial lake it would have incorporated some of the glacial lake silt and clay into the basal till. This process would account for the fine-grained and consolidated nature of the till exposed at the base of the modern cut. Previous drilling in Nansen Creek indicates

Johnson Exploration's operation in 2011 (Photo credit: Steve Beaulieu).

A close-up photo of the basal till false bedrock in Nansen Creek. The till is very compact, contains polished foreign clasts, and likely masks a pre-glacial channel in Nansen Creek.

the pre-Reid glacial unit and depth to the pre-glacial fluvial deposit is greater than 24 m (80 ft). The presence of a pre-glacial placer deposit will undoubtedly be present below the pre-Reid till in Nansen Creek.

Gold Characteristics The gold was mostly flat and fine with the majority of gold having a size of 30 mesh. Some 1/4 oz nuggets are recovered. On the margins of the valley, gold grains are commonly 50-60 mesh. The fineness averaged 800 to 810.

Discovery, a tributary of Nansen

115I/03 2013: 62°04'41"N, 137°11'37"W

Smith, G. 2014
Frizzell, D., 2002-2013

Water License: PM07-569 (Active 2018)
Active Producer (2010-2014) **Operation no. 195**

Location 1.8 km upstream from the mouth of Discovery Creek, a left-limit tributary to Nansen Creek.

Work History and Mining Cuts Reclamation primarily occurred in 2010 on the north (right limit) side of Discovery Creek, while sluicing commenced in 2011 on the left limit. Sluicing of the left limit near an unnamed tributary is the only recorded activity in 2012 and 2013. In 2014, the property was purchased by G. Smith.

Equipment and Water Treatment Equipment included a Caterpillar D7E bulldozer, Caterpillar 235 excavator, Caterpillar 966 loader, and Caterpillar 631B scraper. The wash plant consisted of a grizzly-fed trommel and effluent was treated in-stream via a series of settling ponds.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is andesite, dacite, breccia, tuffs, rhyolite, and porphyry (Templeman-Kluit, 1984).

Gold Characteristics Not reported.

Discovery, a tributary of Nansen

115I/03 2012: 62°04'52"N, 137°09'45"W

Marshall, C., 2010-2012

Water License: PM04-410-2 (Active 2014)
Active Producer (2010-2012) **Operation no. 196**

Location Uppermost Discovery Creek, a left-limit tributary to Nansen Creek.

Work History and Mining Cuts In 2010, Mr. Warville transferred license PM04-410-2 to Mr. Grennan, who mined both left and right limits. Reported work in 2011 primarily consisted of testing with minor sluicing. In 2012, Mr. Grennan reassigned the license to Mr. Marshall and Mr. McCarthy, who conducted minor sluicing and testing at the headwaters of Discovery Creek. No activity is reported for the 2013 season.

Equipment and Water Treatment Equipment identified on site in 2011 included a John Deere excavator, a bulldozer, and a trommel wash plant.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartz monzonite, granite, alaskite, and granodiorite (Templeman-Kluit, 1984).

Gold Characteristics Not reported.

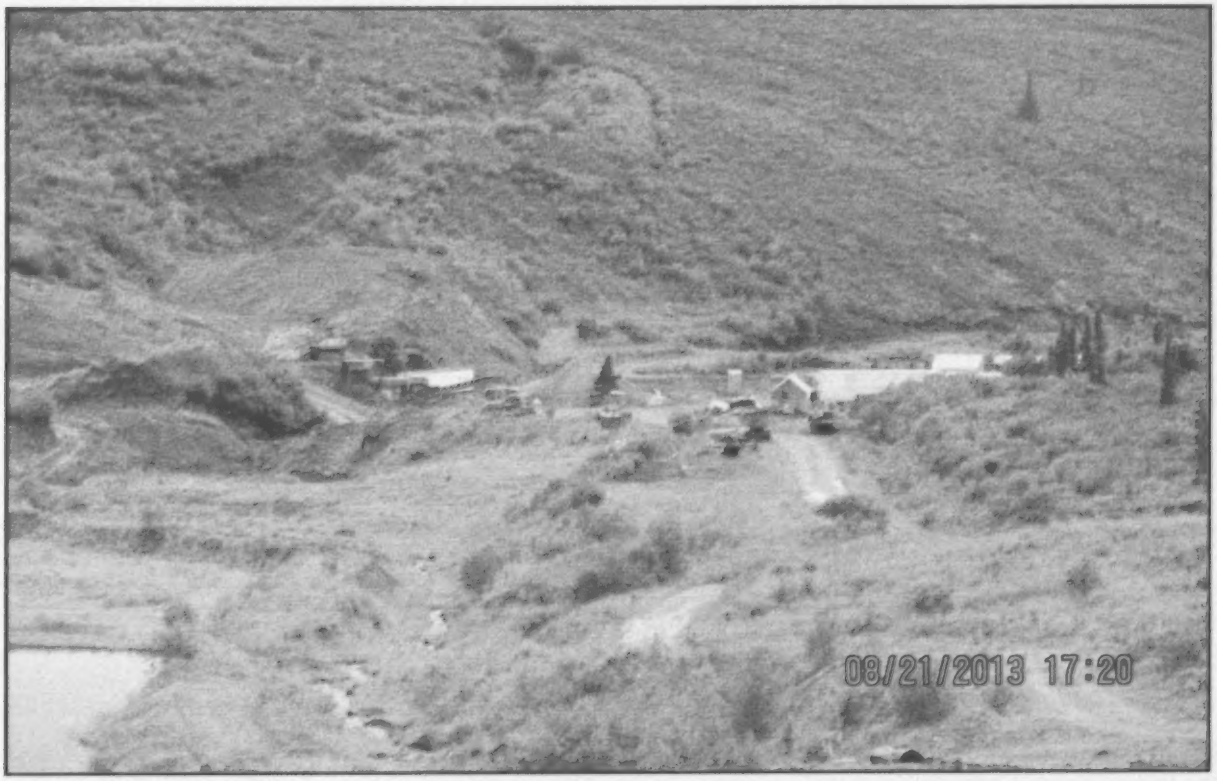
Dolly, a tributary of Nansen

115I/03 2013: 62°03'53"N, 137°12'46"W

Crawford and Marchand, 2008, 2013

Water License: PM07-550 (Active 2017)
Active Producer (2013) **Operation no. 197**

Location Dolly Creek, left limit tributary of Nansen Creek, in between Discovery and Webber Creek.



Mr. Frizzell's operation on Discovery Creek in 2013 (Photo credit: Steve Beaulieu).

Wash plant on Discovery Creek under PM04-410-2 in 2011 (Photo credit: Steve Beaulieu).

Work History and Mining Cuts The only activity recorded under PM07-550 was in 2013. The operator excavated material on the right limit and conducted small amounts of earth moving.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is andesite, dacite, breccia, tuffs, and rhyolite (Templeman-Kluit, 1984).

Gold Characteristics Not reported.

Nansen, a tributary of Nisling

115I/03 2014: 62°03'26"N, 137°13'16"W

Chaschin, K., 2014
Quilala, H., 2009, 2011-2013

Water License: PM08-596 (Active 2018)
Active Producer (2011-2014) **Operation no. 198**

Location Nansen Creek, between Dolly and Webber Creek.

Work History and Mining Cuts The ground was transferred to Mr. Chaschin in 2014 by Mr. Quilala who was active from 2011 to 2013. In 2011, stripping took place and improvements to the access road were made. Some activity occurred in 2012 and some fine gold was recovered in 2013. In 2014, Mr. Chaschin mined the left limit of Nansen Creek and totaled 20,000 loose cubic yards (15 290 m³) of sluiced material during the season. A three man crew was operating one daily shift at the mine.

Equipment and Water Treatment Equipment used in the 2014 season included a Komatsu PC 200LC, Daewoo 280 excavator, Halla 380 loader with a 5.5 yd bucket, and Komatsu 85 bulldozer. The wash plant consisted of a 8 by 10.5 ft grizzly with 9" spacing that fed a 6 by 20 ft non-chain driven spiral trommel that classified to 3/4" and processed 50 loose cubic yards (38 m³) per hour. The spirals allow for a 100 ft of travel within the trommel. Tailings off the trommel were distributed using a 25 ft conveyor stacker. The sluice consisted of two 7 by 12 ft runs with hydraulic, vibrating riffles.

Surficial Geology and Stratigraphy Mining occurs in near surface gravel that are deposited on a false bedrock of boulder clay. The false-bedrock or unit 1 was not exposed but is assumed to be similar to the till exposed at the base of the Johnson's mine farther upstream. Unit 2 is 2.5 m (8 ft) thick and is a cobble-pebble gravel with subangular to subrounded clasts in a coarse sand matrix. All of unit 2 and approximately 0.30 m (1 ft) of unit 1 is considered pay. Unit 3 is 1.2 m (4 ft) of clast support angular pebble-cobble gravel with a medium-grained sand matrix. The gravel of units 2 and 3 are overlain by a well-sorted sandy overburden (unit 4) with thin lenses of organics and White River tephra. This overburden unit is pervasive in lower Nansen Creek and is interpreted as a reworked periglacial aeolian sand deposit (washed dunes or sandsheets) originating from a former outwash floodplain in the Nisling River valley to the south.

Bedrock Geology Bedrock is calcite-biotite schist, amphibolite, gneiss, schist, phyllite, quartzite, and ultramafics (Templeman-Kluit, 1984).

Exploration Potential Variable thicknesses of aeolian sand overburden are present on the left limit of Nansen Creek in this area. Future exploration may locate additional pay gravel under the sand.

Gold Characteristics Gold is 90% fine, with some nuggets up to 1/4".

Webber, a tributary of Nansen

115I/03 2013: 62°03'25"N, 137°10'33"W

Orotec International Ltd., 2009, 2010

Water License: PM07-589 (Active 2018)
Active Producer (2010) **Operation no. 199**

Location Webber Creek

Work History and Mining Cuts The only recorded activity on Webber Creek occurred in 2010 with minor class one activity.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is calcite-biotite-schist, amphibolite, gneiss, schist, phyllite, quartzite, and ultramafic rocks (Templeman-Kluit, 1984).

Gold Characteristics Not reported.

Cabin, a tributary of Nansen

115I/03 2013: 62°02'42"N, 137°11'11"W

Berdahl, R., 2014
Orotec International Ltd., 2009, 2010

Water License: PM07-590 (Active 2018)
Active Producer (2009-2010, 2014) **Operation no. 200**

Location Cabin Creek

Work History and Mining Cuts No work history was reported for the 2010 mining season. In 2014, the property was transferred to Ron Berdahl. Mr. Berdahl completed a 2-D resistivity program under the Yukon Mineral Exploration Program (YMEP).

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy The surficial geology of Cabin Creek is partially exposed in exploration cut lines in the headwaters of the drainage. Exposures indicate that near surface deposits consist of weathered bedrock colluvium. The drainage was glaciated by pre-Reid ice and erratics from this glaciation are present at the drainage divide at 1312 m (4300 ft) elevation. Erosion of valley bottom deposits from this glaciation was likely minimal because the drainage orientation is perpendicular to local ice flow up the Nansen Creek valley. Till deposits should be expected within the valley bottom stratigraphy along Cabin Creek and should overlie a pre-glacial gravel. Post-glacial acolian sand deposits form significant accumulations in the lower part of the drainage, especially on the left-limit. These deposits will be a hindrance to placer development; however the upper reaches of the drainage and the right limit generally have less sand overburden.

Bedrock Geology Bedrock is calcite-biotite schist, amphibolite, gneiss, schist, phyllite, quartzite, and ultramafics (Templeman-Kluit, 1984). At the headwaters of the drainage is the Flex deposit with epithermal vein mineralization and gold grades averaging 5.9 g/t. The gold in the epithermal deposits typically occurs within quartz veins and up to 25% could be free gold or electrum (Hart and Langdon, 1998).

Gold Characteristics Not reported.

Victoria, a tributary of Nisling

115I/03 2014: 62°05'16"N, 137°06'26"W

Spring Cove Enterprises Ltd., 2007-2012; Harasimiuk, S., 2012-2014

Water License: PM06-524-1 (Active 2017)
Water License: PM07-565 (Active 2017)
Active Producer (2009-2010, 2014) **Operation no. 201**

Location Upper left fork of Victoria Creek.

Work History and Mining Cuts Spring Cove Enterprises Ltd. (PM07-565) operated on Victoria Creek from 2010 to 2012. In 2010, they mined a cut on their lower claims located on the left limit of Victoria Creek. They also drilled the left limit with an impact drill to determine the location of the paleochannel. No activity was reported in 2011. In 2012 through 2014, Mr. Harasimiak (under PM06-524-1) leased the ground and initiated a program of testing a number of targets on the claim block. This work included test pitting, bulk sampling, drilling with an 8" auger, and resistivity geophysics. Approximately 44 test pits were dug on Victoria, Eva, and Lady Bug creeks.

Equipment and Water Treatment Equipment reported on site included a Caterpillar D11 and D8 bulldozers, a Komatsu 400 excavator, 400 Hitachi excavator, 450 and 500 Komatsu loaders, and Caterpillar 312B excavator for feeding the plant. Two wash plants were employed during the testing program. The smaller plant was a Goldfields Clay Buster trommel capable of handling 50 yd^3 per hour. It had a 6" grizzly dump that fed a 30 ft trommel with a double screen that classifies material into two size ranges for sluicing in separate runs: 1/4" to 3/8" and <1/4". The sluice runs have an initial 4 ft wide run that is split into two 3 ft wide runs for a total length of 18 ft. A variety of separation technologies are used in the runs including a nugget trap, hydraulic riffles, angle iron riffles, expanded metal, and 3M miners moss. The larger of the two plants, primarily used in the bulk sample testing, has an 8 ft wide shaker deck that screens to 1/2" and 1/4" and again has separate sluice runs for each fraction. The oscillating sluice runs are 4 ft wide by 16 ft long.

Surficial Geology and Stratigraphy The primary target in Victoria Creek is a near surface modern gravel that was deposited on a false bedrock of clay and silt rich glacial moraine (till). The modern gravel ranges in thickness from 3.6 to 6 m (12 to 20 ft) and the high grade channel is reported to meander within the valley bottom. Limited drill testing indicated that the till unit is 16 m (55 ft) thick near the mouth of the left fork of Victoria Creek. Gravel was reported below the till, similar to the stratigraphy documented on Back Creek.

Bedrock Geology Bedrock is granodiorite and quartz diorite (Templeman Kluit, 1984).

Gold Characteristics The gold is generally fine with a few nuggets.

Unnamed, a tributary of Victoria

115I/03 2013: 62°06'24"N, 137°06'30"W

Aley, R., 2013

Water License: PM13-026 (2023)
Active Producer (2013) **Operation no. 202**

Location Unnamed left limit tributary of the left fork of Victoria Creek.

Work History and Mining Cuts Mr. Aley operated with one to three miners and one camp personnel in their first season (2013). They worked a 10 to 12 hour shift daily, primarily conducting exploration and some sluicing. Several test holes were dug throughout the season and materials were manually handled for testing, assessment, and sampling.

Equipment and Water Treatment Equipment included a Caterpillar D7 bulldozer with a 10 ft straight blade, a Komatsu WA350 wheel loader with 3.5 yd bucket, and a Caterpillar 330 excavator with 0.75 yd and 1.5 yd buckets. Water was acquired from the unnamed creek and supplied at 500 igpm by a 6" Detroit pump powered by a diesel engine. The trommel wash plant was 8 ft in diameter by 20 ft long with 1" punch plates. The sluice run sloped 1" per foot and was 8 by 20 ft with synthetic rubber matting. Clean ups were conducted with a pan.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is calcite biotite schist, amphibolite, phyllite, and quartzite (Templeman Kluit, 1984).

Gold Characteristics Gold is dull with rough edges and approximately 6 mesh in size.

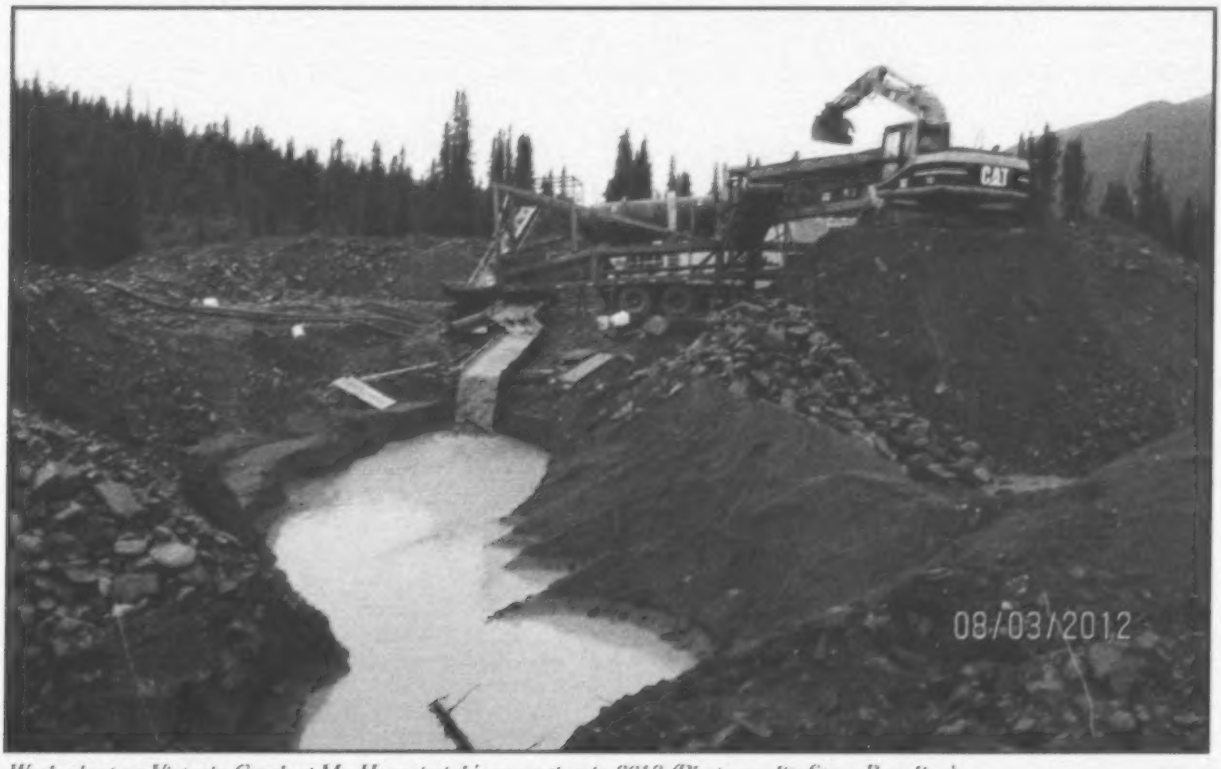
Back, a tributary of Victoria

115I/03 2014: 62°03'44"N, 137°07'21"W

38857 Yukon Inc., 2006-2013; A-1 Cats, 2014

Water License: PM10-019 (2020)
Active Producer (2010-2014) **Operation no. 203**

Location Back Creek, approximately 3 km upstream of its confluence with Victoria Creek.



Wash plant on Victoria Creek at Mr. Harasimiuk's operation in 2012 (Photo credit: Steve Beaulieu).

Work History and Mining Cuts In 2010, sluicing and stripping occurred upstream from camp and on the left limit of the valley. Between 2011 and 2013 Mr. Hearn conducted a large stripping program of frozen ground downstream of the camp. Two pits were opened up on the left limit that provided access to a pay channel on bedrock. In 2014, Mr. Hearn leased his ground on Back Creek to A-1 Cats. A-1 Cats conducted an exploration program on the lower reaches of Back Creek consisting of resistivity geophysics and auger drilling. A crew of three used an 8" auger to drill approximately 120 holes in fence patterns in lower Back Creek.

Equipment and Water Treatment Equipment on site in 2011 included a Caterpillar D8H bulldozer, Caterpillar D11 bulldozer, Hitachi excavator, and trommel. Three new settling ponds were constructed in 2011 and 2012 for a total of four settling ponds on site to treat effluent.

Surficial Geology and Stratigraphy The 2011-2013 mining cuts downstream from camp expose up to 21 m (70 ft) of overburden and pay (partially exposed due to sloughing and high water). It is not known when Back Creek was last glaciated but it is estimated to be more than 250000 years ago during the pre-Reid glaciations, but could be more than 1000000 years ago. During this time glaciers advanced from the Nisling River valley and flowed up Victoria Creek drainage. Most of the overburden in Back Creek is attributed to this up-valley ice flow that would have deposited glacial lake sediments and till on the pay gravel. The pay unit is 3 m (10 ft) thick and consists of oxidized, angular, cobble-pebble gravel with local lithologies. According to Mr. Hearn the best pay is located on the left limit (north side) and generally dips into the slope. He noted that an "underground river" was encountered near bedrock and the pay unit was better north of the ground water aquifer. All of the pay gravel was sluiced except in the 2011 cut where surface water drainage issues and bank sloughing prevented bedrock from being reached. Immediately below camp the overburden consisted of a consolidated till with a silty sand matrix. Clast lithologies in the till were largely foreign with a subrounded shape. This is indicative of a regional glacial deposit and consistent with the findings of LeBarge (1995) who documented till on bedrock at an elevation of 1310 m (4300 ft) in Back Creek, well above the 2011-2013 cuts.

38857 Yukon Inc. operation on Back Creek in 2011 (Photo credit: Steve Beaulieu).

Bedrock Geology Bedrock at this site was described as decomposed schist (LeBarge and Nordling, 2011) and is mapped as amphibolite, quartz mica-schist, and phyllite (GSC, Open File 1101). The pay gravel lithogies were largely igneous, possibly the Mount Nansen Group andesite (Hart and Langdon, 1997).

Gold Characteristics The distribution of gold consisted of 10% nuggets ranging from 0.5 to 1 oz and 90% that were approximately 18 mesh. Larger nuggets ranging from 1 to 2 oz were mined in the 2013 cut just below camp. The fineness of gold is 815 to 820.

Pony, a tributary of Back

115I/03 2013: 62°03'08"N, 137°07'57"W

Tulk, G., 2013

Water License: PM11-022 (2023)
Active Producer (2013) **Operation no. 204**

Location Pony Creek, upper.

Work History and Mining Cuts Mr. Tulk operated a small scale operation in his first mining season (2013). Test holes were excavated and sluicing occurred throughout the season.

Equipment and Water Treatment Reported equipment on site included an excavator and a small screen deck.

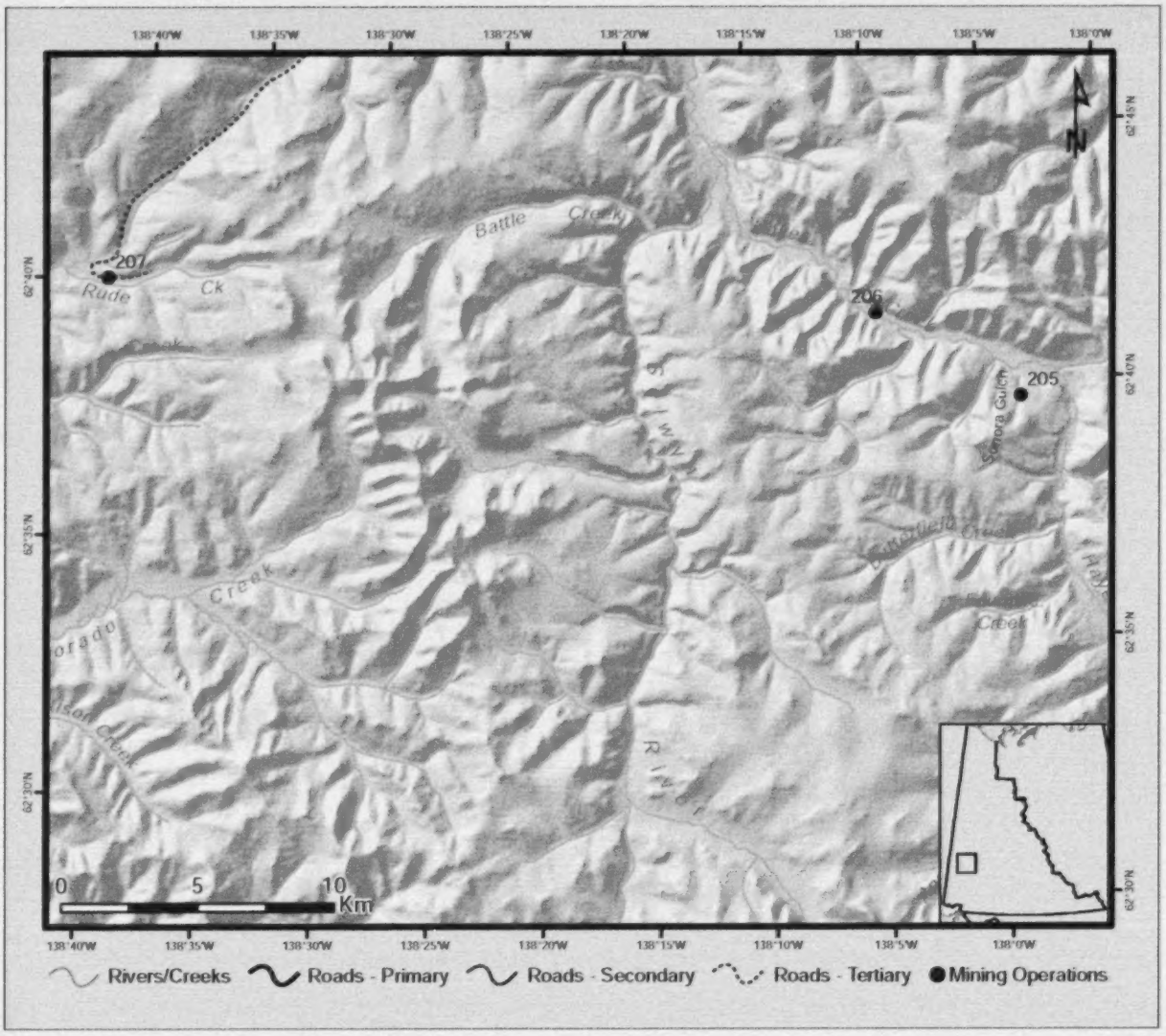
Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is calcite biotite schist, amphibolite, phyllite, and quartzite (Templeman-Kluit, 1984).

Gold Characteristics Not reported.

HAYES-RUDE
PLACER AREA

SITES 205 - 207



LEGEND

205 ..... Wilson, G.
206 ..... Pure Exploration Inc.
207 ..... Fournier, A.

Sonora, a tributary of Hayes

115J/09 2010: 62°39'27"N, 138°01'40"W

Wilson, G., 2000-2001, 2007-2013

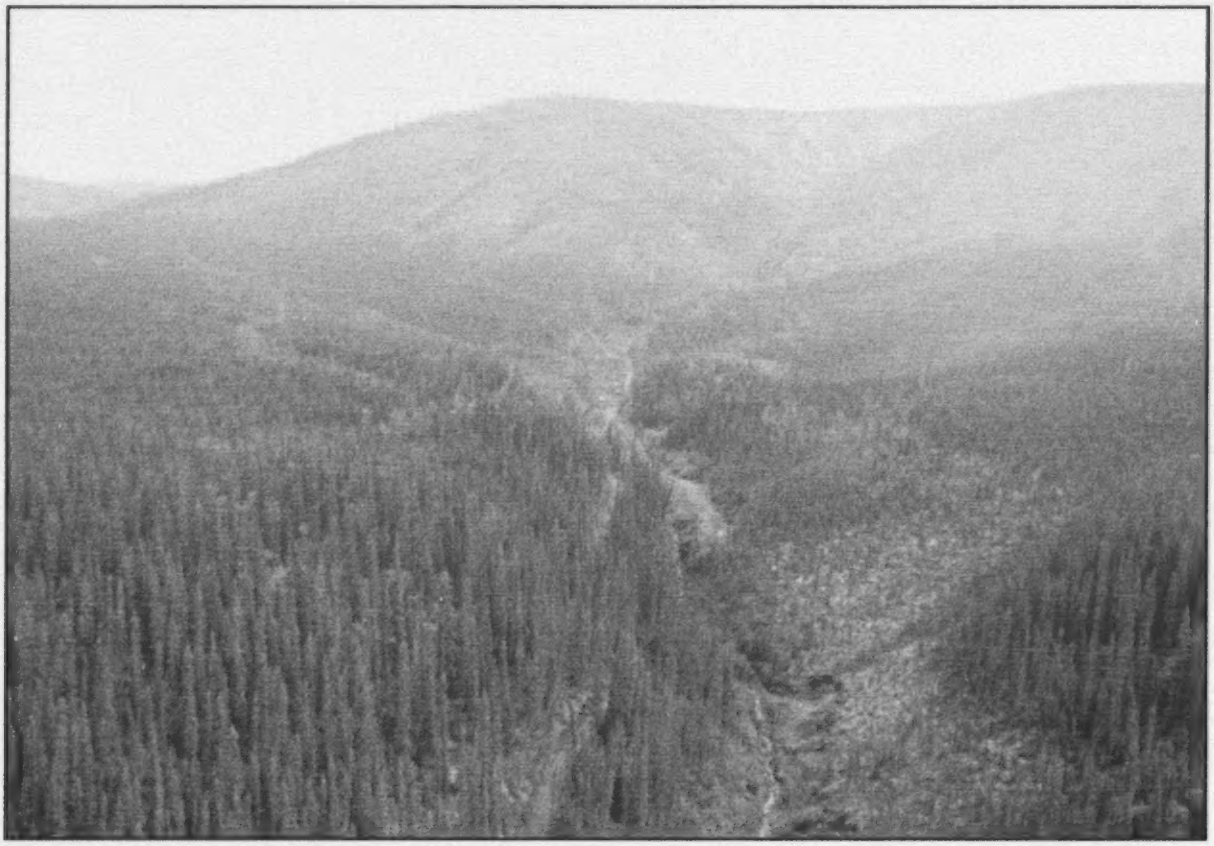
Water License: PM10-003 (Active 2014)
Active Producer (2010-2013) **Operation no. 205**

Location Sonora Gulch, approximately 1 km upstream from its confluence with Hayes Creek.

Work History and Mining Cuts Mr. Wilson has been active on Sonora Gulch for the past fifteen years and accesses his mine by winter trail off the Freegold Road. In 2010, he mined a right limit buried channel of Sonora Gulch that cuts into a pre-Reid outwash gravel terrace. The channel is positioned immediately downstream from where Sonora Gulch leaves its valley and changes trajectory. The mine was active during the 2011, 2012, and 2013 seasons, but no specific work history is recorded.

Equipment and Water Treatment Equipment on site in 2010 included an excavator used to strip, mine, and feed the wash plant. The wash plant processed 20 yd^3 (15 m^3) of gravel per hour and consisted of a 10" grizzly followed by a 1 1/16" screen deck. The sluice sequence included a short sluice with coarse riffles, boil box, and sluice deck with expanded metal and angle iron riffles.

Surficial Geology and Stratigraphy The lower unit on the 2010 right limit mining cut consisted of pre-Reid glaciofluvial outwash gravel, which was oxidized, loose, coarse and clast-supported; clasts were subrounded to rounded and comprised 30% granules, 30% pebbles, 30% cobbles, and 10% boulders; the matrix was 30% by volume and consisted of coarse sand. Open work structures and channels oriented perpendicular to the orientation of Sonora Gulch suggest that the gravel was deposited in glaciofluvial flows down Hayes Creek. Overlying the outwash gravel is 1 m (3.3 ft) of gulch pay gravel (buried channel) which was frozen, clast-supported, coarse and angular with 20% silty sand matrix and a clast size distribution of 10% granules, 30% pebbles and 60% cobbles; open work structures indicate high energy flow within this unit. The gulch pay gravel was overlain by frozen muck which has caused the modern stream to be offset 10 to 15 m west of the buried channel. The modern stream channel is considered low paying. The muck deposit is up to 9 m (29.5 ft) thick and consists of a



Aerial view of Mr. Wilson's operation up Sonora Gulch in 2010.

mixture of weathered bedrock, interstratified organic material and sandy Sonora Gulch-fluvial sediments. The colluvium generally consisted of 60% sandy matrix and 40% angular clasts with a size distribution of 30% pebbles, 40% cobbles, and 30% boulders. Organic beds up to 50 cm thick dipped north (downslope) and contained woody debris.

Bedrock Geology Bedrock is amphibolite, quartz-mica schist, and phyllite (Johnston, 1995).

Gold Characteristics Gold is 40% fine, 30% medium, and 30% large.

Hayes, a tributary of Selwyn

115J/09 2013: 62°40'48"N, 138°08'12"W

Pure Exploration Inc., 2010-2013

Water License: PM11-004 (Active 2016)
Active Producer (2010-2013) **Operation no. 206**

Location Hayes Creek, approximately 18 km upstream from its confluence with Selwyn River.

Work History and Mining Cuts In 2010, Pure Exploration Inc. began bulk testing and trenching at Hayes Creek. Bulk testing and stripping occurred in 2011 and 2012. Further testing and production occurred throughout the 2013 season.

Equipment and Water Treatment Equipment on site included a John Deere 200 LC excavator and a Caterpillar D6H bulldozer. A small plant was present on site in 2012 but was not in operation.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is amphibolite, quartz-mica schist, and phyllite (Johnston, 1995).

Gold Characteristics Gold is angular and bright. Both gold quartz nuggets and soft gold tetradymite nuggets are common.

Rude, a tributary of Dip

115J/10 2010: 62°40'06"N, 138°41'06"W

Fournier, A., 2004, 2010-2013

Water License: PM04-386 (Active 2015)
Active Producer (2010- 2013) **Operation no. 207**

Location Rude Creek.

Work History and Mining Cuts In 2010, Mr. Fournier mined on the bottom third of his claims, where the valley widens. A 60 by 150 m (196 by 492 ft) area was cleared and stripped of 1 to 2 m (3.3 to 6.6 m) of gravel. Mr. Fournier was present on site and sluiced from 2011 to 2013, but no other work history is recorded.

Equipment and Water Treatment Water was acquired using a bypass to fill the pump pond and two out-of-stream settling ponds. A spillway was used at the point of discharge to allow water to filter back into the creek.

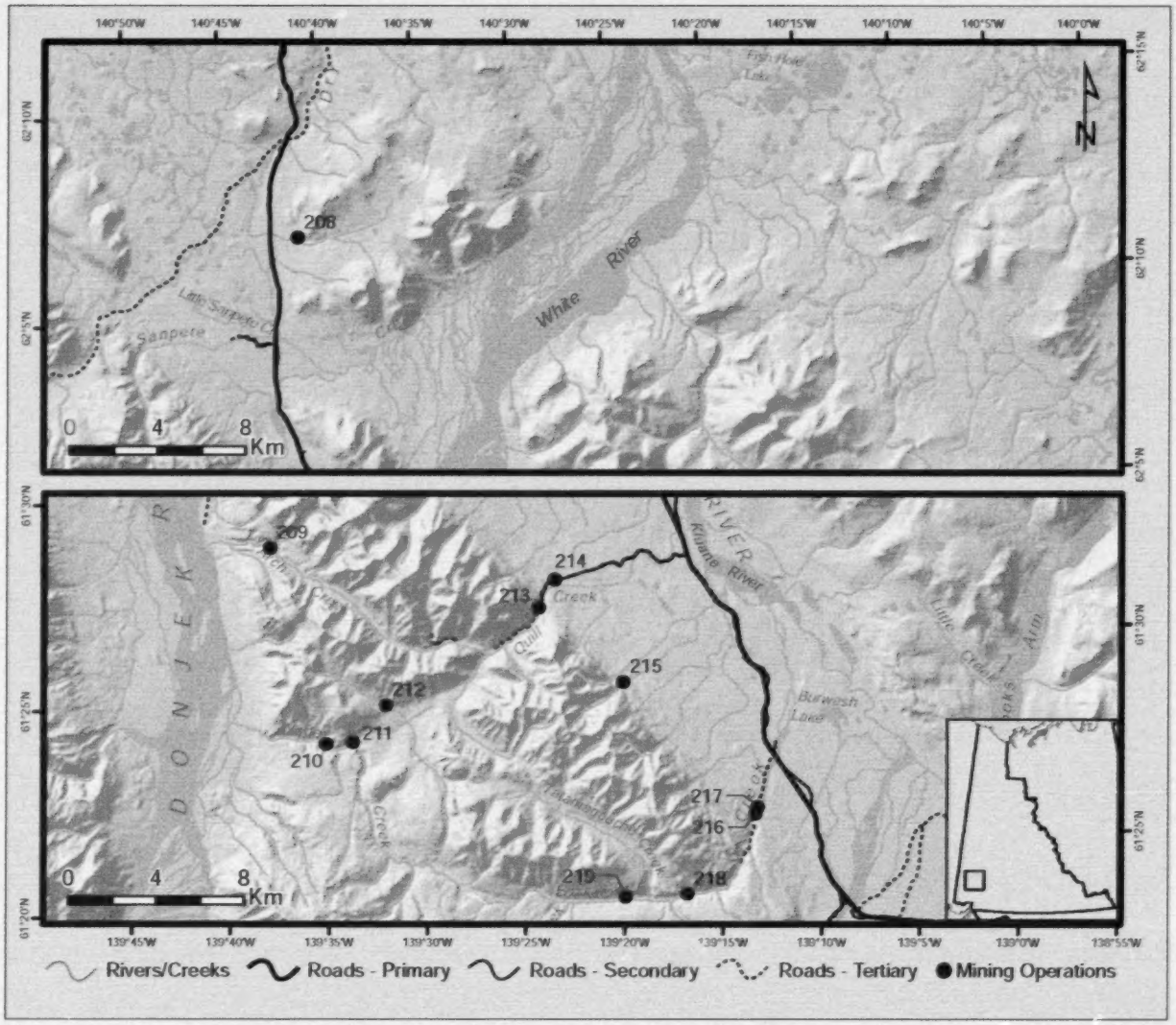
Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is granodiorite and quartz diorite (Johnston, 1995).

Gold Characteristics Not reported.

KLUANE
PLACER AREA

SITES 208 - 219



LEGEND

208 ..... Go4gold Mining Corporation
209 ..... Nelson, R.
210 ..... Fedell, J.
211 ..... Farrington, K.
212 ..... Johnson, S.L.
213 ..... Lombardi, G. & Cecchinato, D.
214 ..... Nichols, J.
215 ..... Kazmierczak, P.
216 ..... Northern Minerals Development Inc.
217 ..... Johnson, S. Jr.
218 ..... Johnson, S.L.
219 ..... Aurum Alliance Ltd.

Dry (No. 1), a tributary of White

115K/02 2014: 62°07'59"N, 140°39'22"W

Go4gold Mining Corporation, 2013-2014

Water License: PM12-034 (Active 2022)
Active Producer (2013-2014) **Operation no. 208**

Location Dry Creek No. 1, east side of the Alaska Highway.

Work History and Mining Cuts Eight test pits were noted in 2014, located primarily on the right limit, approximately 0.7 to 1.3 km upstream from where Dry Creek crosses the highway.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy In 2014, 1 m (3.3 ft) of loose, massive, poorly-sorted gravel was exposed in a right limit test pit dug into a glaciofluvial terrace. The gravel consisted of 40% pebbles, 40% cobbles, and 20% boulders, with 50% silty sandy matrix. Clasts were subangular to subrounded, and the presence of some weathered clasts suggested an older gravel.

Bedrock Geology Bedrock is granodiorite.

Gold Characteristics Not reported.

Upstream view of Dry Creek in 2014, with test pit located on the right limit.

Arch, a tributary of Donjek

115G/05 2014: 61°29'36"N, 139°40'11"W

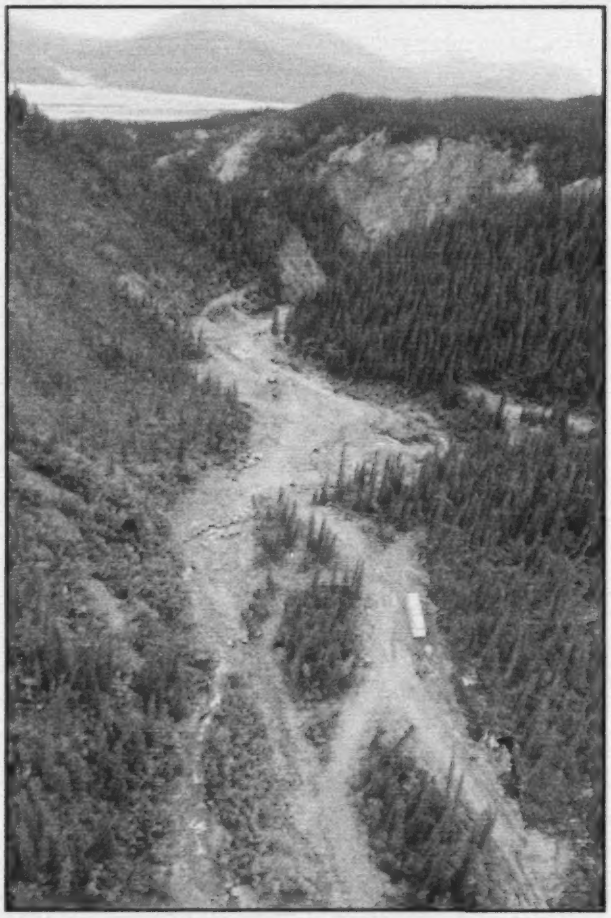
Nelson, R., 2010-2014

Water License: PM09-658 (Active 2015)
Active Producer (2010-2014) **Operation no. 209**

Location Arch Creek, upstream of the second canyon, approximately 3.5 km upstream from its confluence with Donjek River.

Work History and Mining Cuts Dulac Mining operated on Arch Creek under PM04-396 and PM03-326 from 2004 to 2010. In 2010, they employed three miners and one camp personnel. They mined four cuts that year, each measuring 15 by 15 m (50 by 50 ft); two of these cuts were located in the lower canyon and two were located above the canyon. Mr. Nelson purchased the operation and took over water license PM09-658 in late 2010, focusing his activity that year on the lower reaches of Arch Creek. In 2011, a two person crew stripped a cut above the camp area on the left limit. Minor activity occurred in 2012 and 2013 due to mechanical and logistical difficulties. In 2014, Mr. Nelson continued mining on the left limit, upstream of the second canyon; testing was also conducted on a right limit bench at the mouth of Serpentine Creek.

Equipment and Water Treatment In 2010, Dulac Mining utilized a Case 125B excavator for feeding the plant and removing the tailings, a Hitachi UH172 excavator for stripping and stockpiling pay, and a Caterpillar 988A loader. A custom made wash plant consisted of a 5 by 10 ft single



Downstream aerial view of Arch Creek operator, Mr. Nelson, in 2014.

deck screen plant that classified to 3/4" with 2 ft wide jigs and further classified to 2" through boil boxes. The custom plant processed up to 50 loose cubic yards (38 m^3) of gravel per hour. Water was acquired from an in-stream intake ditch and was supplied by an 8 by 10" pump powered by a Detroit 453 engine. Effluent was settled in-stream below the canyon through a series of two 30 by 60 m (100 by 200 ft) ponds. Clean-ups were completed daily out of the jigs and boil boxes while a small clean-up jig was used for final concentrates. In 2014, Mr. Nelson utilized a Caterpillar 235C excavator, a Komatsu 500 wheel loader, a John Deere 700 bulldozer, and a Caterpillar 236B3 skid steer. The Derocker wash plant consisted of two 4 by 8 ft sluice runs with 1" riffles and processed up to 100 to 120 loose cubic yards (76 to 92 m^3) per hour. A 10" Cornell pump powered by an International DT466 diesel engine supplied water to the plant. Effluent was settled in a series of three ponds and discharged back into Arch Creek.

Surficial Geology and Stratigraphy In 2014, a 3 m (9.8 ft) exposure on the right limit consisted of two units. The lower unit is 1.75 m (5.7 ft) thick and consists of pebble-cobble gravel with 10% boulders, 30% pebbles, and 60% cobbles, and a medium sandy matrix; a silty sand matrix-rich bed 0.2 m (0.6 ft) thick, is present near the top of this unit. The upper unit is 1.25 m (4.1 ft) thick and consists of a boulder gravel, dominated by clasts larger than 0.5 m (1.6 ft) and 30 to 40% cobbles, with a sandy matrix. On the left bank, up to 3.6 m (12 ft) of gravel was sluiced overlying an impenetrable clay layer; no bedrock was encountered.

Bedrock Geology Bedrock is tuff, breccia, argillite, agglomerate, basalt, andesite, and sandstone (GSC, Open File 2188 to Open File 2191).

Gold Characteristics Gold is 80% coarse and 20% fine, with a fineness of 870. Copper, platinum, and silver nuggets are also frequently recovered.

Wade, a tributary of Donjek

115G/05 2014: 61°25'00"N, 139°36'11"W

Fedell, J., 2011-2012

Water License: PM09-655 (Active 2020)
Active Producer (2011-2012) **Operation no. 210**

Location Wade Creek, 1.3 km downstream from the mouth of Maple Creek.

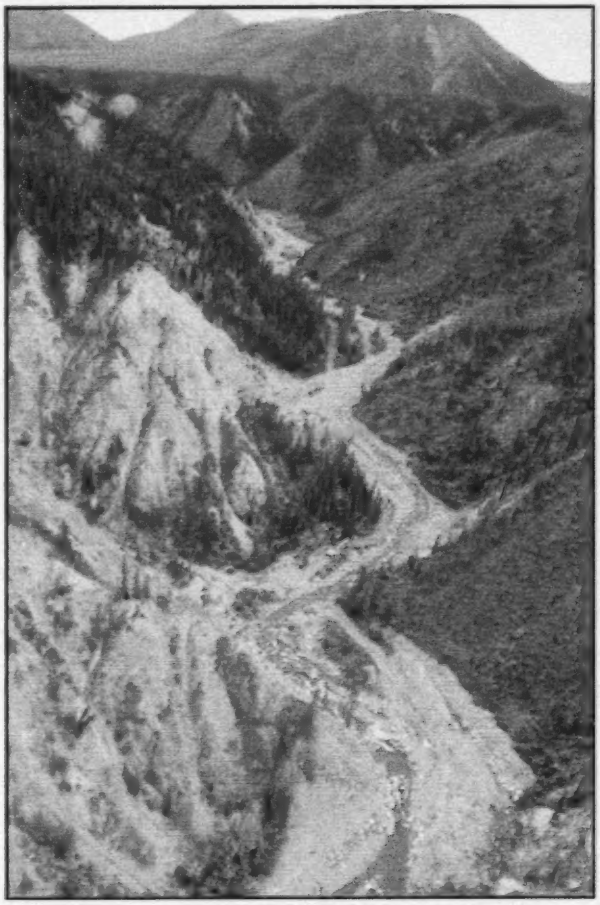
Work History and Mining Cuts In 2011, a three person crew mined on the right limit, stockpiled pay, and stripped a cut on the left limit of Wade Creek. Extensive reclamation occurred in 2012 and both cuts were filled in and re-contoured. Status in 2013 in unknown, and no workings were apparent in 2014.

Equipment and Water Treatment Equipment stationed at Mr. Fedell's camp in 2014 included a John Deere 450C excavator and a static grizzly wash plant.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is granodiorite, quartz diorite, quartz monzonite, and diorite (Dodds and Campbell, 1992).

Gold Characteristics Not reported.



Aerial view looking upstream towards Mr. Fedell's camp on the right limit of Wade Creek in 2014.

Wade, a tributary of Donjek

115G/05 2013: 61°25'08"N, 139°34'51"W

Farrington, K., 2013

Water License: PM12-063-1 (Active 2018)
Active Producer (2013) **Operation no. 211**

Location Wade Creek, at the mouth of Maple Creek.

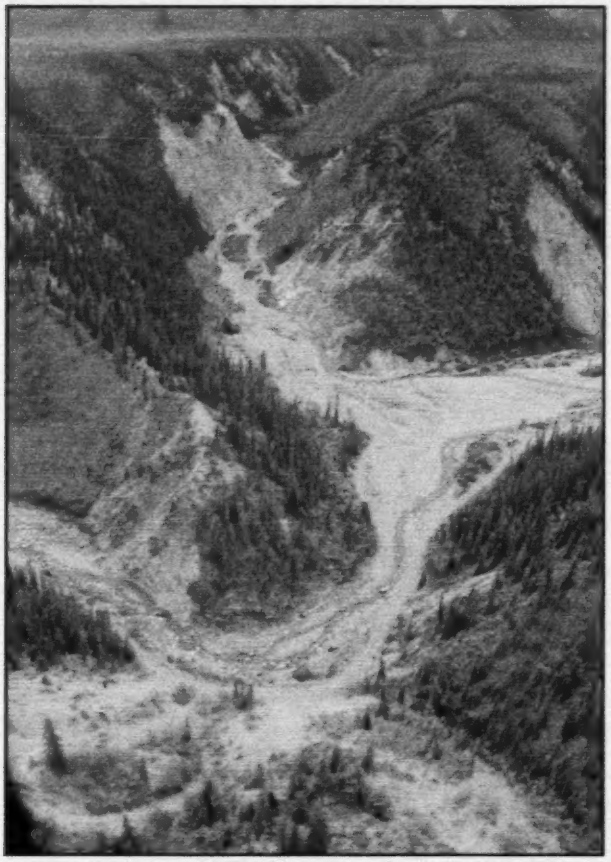
Work History and Mining Cuts Mr. Farrington mined under Mr. Mitchell's license in 2013. Activity occurred on the right limit of Wade Creek at its confluence with Maple Creek. Several cuts were mined, each measuring approximately 5 m (16 ft) deep and 10 m (33 ft) long. In 2014, Mr. Mitchell assigned the water license to Mr. Farrington.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is basalt and andesite (Dodds and Campbell, 1992).

Gold Characteristics Not reported.



Mr. Farrington's operation at the confluence of Wade and Maple creeks.

Maple, a tributary of Wade

115G/05 2014: 61°26'06"N, 139°33'21"W

Johnson, S.L., 2013-2014

Water License: PM11-062 (Active 2022)
Active Producer (2013-2014) **Operation no. 212**

Location Maple Creek and an unnamed right limit tributary to Maple Creek.

Work History and Mining Cuts In 2013, Mr. Courtright sold the ground to Mr. Johnson who tested 300 loose cubic yards (229 m^3) on Maple Creek. In 2014, he continued testing on Maple Creek and up an unnamed right limit tributary. This work included a 75 m (246 ft) long by 5 m (16 ft) wide trench on the right limit, and several test pits on the left limit.

Equipment and Water Treatment A wheel loader and a static grizzly wash plant were stationed on the unnamed right limit tributary.

Surficial Geology and Stratigraphy In 2014, a right limit trench exposed 2.5 m (8.2 ft) of poorly sorted pebble-to-boulder gravel with 40% coarse sand matrix. Clasts were subangular to subrounded, slightly imbricated upstream, and contained an abundance of weathered intrusive rock types. At the top of this unit, a discontinuous pebble gravel, up to 0.15 m (0.5 ft) thick, was overlain by a 1 cm thick buried organic layer. An undulating layer of White River ash capped the sequence, varying in thickness from 12 to 25 cm (0.4 to 0.8 ft). The ground had been stripped above the ash.

Bedrock Geology Bedrock is basalt and andesite (Dodds and Campbell, 1992).

Gold Characteristics Not reported.

Downstream view of the unnamed right limit tributary of Maple Creek, where Mr. Johnson conducted exploration in 2013 and 2014.

Quill, a tributary of Kluane

115G/06 2013: 61°28'53"N, 139°26'08"W

Lombardi, G. and Cecchinato, D., 2013-2014

Water License: PM12-052 (Active 2016)
Active Producer (2013-2014) **Operation no. 213**

Location Quill Creek, approximately 1 km upstream from the mouth of the canyon.

Work History and Mining Cuts Minor testing occurred under PM12-052 in 2013 and 2014.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is peridotite and gabbro (Bostock, 1942).

Gold Characteristics Not reported.

Mine cut exposed on the left limit of Quill Creek in 2014.

Quill, a tributary of Kluane

115G/06 2014: 61°29'37"N, 139°25'30"W

Nichols, J., 2002-2014

Water License: PM06-511 (Active 2016)
Active Producer (2010-2014) **Operation no. 214**

Location Quill Creek, approximately 0.5 km downstream from the mouth of the canyon.

Work History and Mining Cuts From 2010 to 2014, Mr. Nichols operated a daily six hour shift with another miner and one camp employee. Two left limit cuts were mined in 2013, one of which measured 152 m (500 ft) long by 9 m (30 ft) wide. Mining continued at one of these cuts in 2014, and a 30 by 25 m (98 by 82 ft) area behind the cut was stripped.

Equipment and Water Treatment Equipment included a Caterpillar D8K for stripping, a 966 loader to move material, a P&H excavator for feeding the wash plant, and another excavator for trenching. The wash plant consisted of a 4 by 8 ft grizzly with a spray bar, over a single 3 ft wide by 12 ft long sluice run with angle iron. The wash plant processed 60 loose cubic yards (46 m^3) of gravel per hour, and water was supplied by a 6" pump powered by a GM engine. Water was acquired from Quill Creek and effluent was treated out-of-stream through a series of four settling ponds. Clean ups were conducted using wheels and a screen.

Aerial view looking upstream, of Mr. Nichols mining operation on Quill Creek in 2014.

Surficial Geology and Stratigraphy The 2014 right limit cut exposed 1.2 m (3.9 ft) of a crudely bedded gravel with 10% boulders, 40% cobbles, and 50% pebbles, and 40% medium-grained sandy matrix. Many clasts are very weathered suggesting that the gravel is relatively old. Overlying the gravel is 1.5 m (4.9 ft) of interbedded fine sand, organics, and clayey silt with some pebbles. The section is capped with 1.3 m (4.3 ft) of organics with a 15 cm (0.5 ft) thick White River ash layer located near the surface. Up to 3.4 m (11 ft) of gravel was sluiced from 2010 to 2013.

Bedrock Geology Bedrock is peridotite and gabbro (Bostock, 1942).

Gold Characteristics Gold is smooth, shiny, and has a fineness of 867.

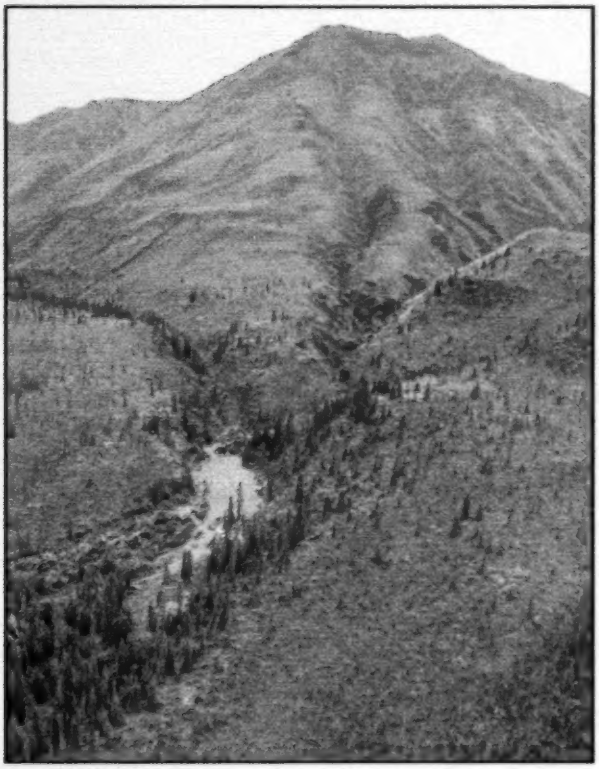
Sakiw, a tributary of Kluane

115G/06 2014: 61°27'18"N, 139°21'24"W

Kazmierczak, P., 2014

Water License: N/A
Active Producer (2014) **Operation no. 215**

Location Upper Sakiw Creek, approximately 7 km upstream from the Kluane River.



Mr. Kazmierczak's operation on upper Sakiw Creek in 2014.

Work History and Mining Cuts Mr. Kazmierczak purchased the claims from Mr. Jeanson. Activity in 2014 included testing and other class 1 activities, with no additional work history known.

Equipment and Water Treatment Equipment marshalled at camp included an excavator.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is tuff, breccia, argillite, agglomerate, basalt, andesite, and sandstone (Dodds and Campbell, 1992).

Gold Characteristics Not reported.

Burwash, a tributary of Kluane

115G/06 2008: 61°24'38"N, 139°13'53"W

Northern Mineral Development Inc., 2010-2013

Water License: PM03-331 (Active 2015)
Active Producer (2010-2013) **Operation no. 216**

Location Burwash Creek, lower.

Work History and Mining Cuts The upper claims were mined in 2010 and 2011. In 2012, Mr. Mitchell sluiced 764 m^3 (1000 yd^3) of material from the bench on the far right limit of Burwash Creek under PM03-331. Activity was reported on site in 2013 although no specific work history is recorded.

Equipment and Water Treatment Equipment present on site in 2010 included a Caterpillar 235 excavator.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock on the terrace consists of a silicified argillite, which is decomposed in places.

Gold Characteristics Not reported.

Burwash, a tributary of Kluane

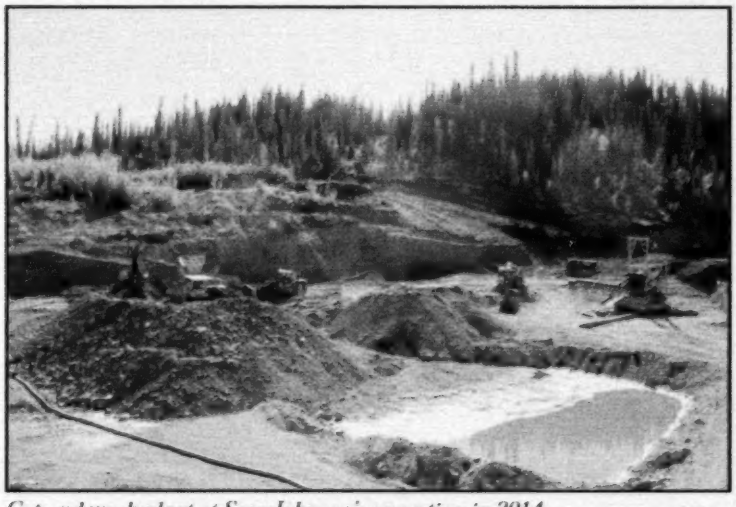
115G/06 2014: 61°24'29"N, 139°13'56"W

Johnson, S. Jr., 2004-2009, 2011-2014

Water License: PM04-435 (Expired 2010)
Water License: PM11-012 (Active 2015)
Active Producer (2011-2014) **Operation no. 217**

Location Burwash Creek, just downstream of the lowermost canyon. The operation was not on claims, but

Aerial view of Sam Johnson's operation on lower Burwash Creek in 2014.



Cut and wash plant at Sam Johnson's operation in 2014.

was located between the downstream post of P03598 and the upstream post of P03915, on Kluane First Nation (KFN) Category A settlement land (R1A). Mr. Johnson had written permission from KFN to operate here.

Work History and Mining Cuts Sluicing occurred from 2011 to 2014 with all activity located on the right limit of Burwash Creek. Mining took place progressively upstream towards the lowermost canyon. A three personnel crew was present on site in 2012. High waters in 2013 delayed the season but sluicing and stripping activity continued on the right limit bank and onto the bench. In 2014, three miners operated a daily shift and continued mining the 2013 cut. A test pit 3 m deep was also dug on the bench upslope from the cut.

Equipment and Water Treatment Equipment present in 2014 included a Hitachi 200 excavator, a Koehring 666 excavator, a Caterpillar C966B wheel loader, and a Caterpillar D7 bulldozer. The wash plant processed 25 to 30 loose cubic yards (19 to 23 m^3) per hour and consisted of a 3 ft diameter trommel with 2 ft wide by 12 ft long sluice run with expanded metal and angle iron. Clean-ups were conducted with a jig and finished on a wheel.

Surficial Geology and Stratigraphy In 2014, a right limit cut exposed 5 m (16.4 ft) of pebble-cobble gravel, downstream from the mouth of the canyon. The gravel is poorly sorted and comprises 10% boulders, 50% cobbles, and 40% pebbles, with subangular to subrounded clasts and a coarse sand matrix. The gravel is crudely stratified and faintly imbricated in a downstream direction, and contains fewer boulders in the lower 1 m (3.25 ft). A discontinuous bed of medium to coarse grained sand up to 20 cm (0.6 ft) thick is located in the lower part of the gravel unit. All gravel was sluiced and higher grades were reported as mining progressed upstream.

Bedrock Geology Bedrock is weathered schist.

Gold Characteristics Gold has a fineness of 850 to 860. A 1.5 oz nugget is the largest nugget recovered.

Burwash, a tributary of Kluane

115G/06 2014: 61°22'21"N, 139°16'57"W

Johnson, S.L., 1993-2002, 2004-2014

Water License: PM04-453 (Closed 2010)
Water License: PM11-061 (Active 2017)
Active Producer (2010-2014) **Operation no. 218**

Location Burwash Creek, downstream from the mouth of Tatamagouche Creek.

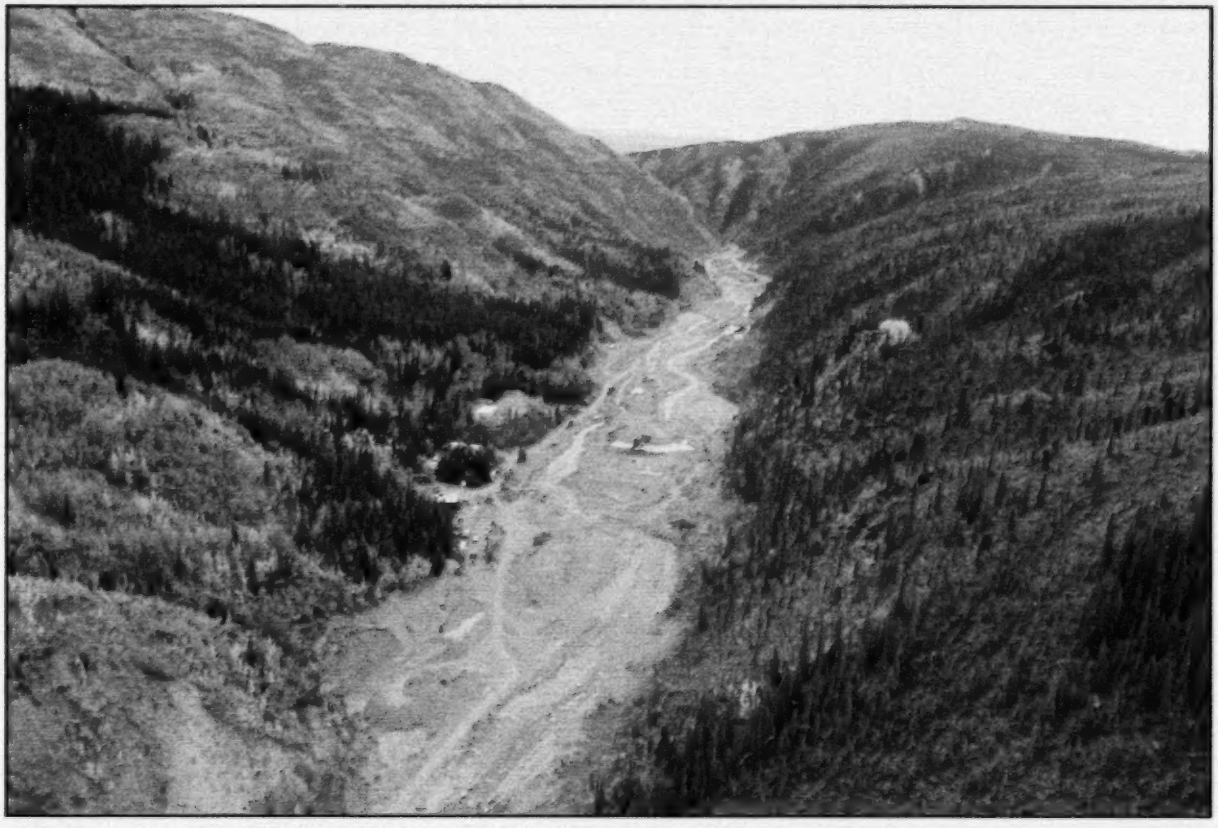
Work History and Mining Cuts A cut on the right limit was stripped and mined in 2010, downstream from camp. Two cuts on the left limit were mined in 2013, the first located in front of camp and the second 350 m (1,148 ft) downstream. In 2014, six miners and one camp personnel

operated 24/7, mining primarily tailings but also a 50 m (164 ft) long left limit cut upstream from camp. Stripping occurred on the right limit and mining was planned there later in the season.

Equipment and Water Treatment Equipment on site in 2014 included a Link-Belt 330LX excavator, a Link-Belt 2800 excavator, a Case Drott excavator, a Komatsu WA500 wheel loader, a Caterpillar 977 bulldozer, a Caterpillar D8 bulldozer, and a Caterpillar 420D backhoe. Three wash plants were utilized: a New Zealand style floating plant which processed 170 to 200 loose cubic yards (130 to 153 m^3) per hour; a floating shaker plant which processed 170 to 200 loose cubic yards (130 to 153 m^3) per hour; and a land-based oscillating plant which processed 90 loose cubic yards (68 m^3) per hour. Both floating plants acquired water with a 6" pump, while a 4" pump supplied the land-based plant. Water was 100% recycled. Clean-ups were conducted using a hand sluice, jig, and 6 ft wheel.

Surficial Geology and Stratigraphy A 10 m tall left limit cut located 1.3 km downstream from Tatamagouche Creek, exposed eight units. Unit 1 is located at the base of the section, and consists of 1 m (3.3 ft) of matrix-supported, horizontally-bedded, sandy pebble gravel with no bottom contact exposed. Unit 1 consists of 70% coarse sand matrix, while the granule to pebble clasts are subangular to subrounded and often highly weathered. Unit 2, from 1.0 to 1.1 m (3.3 to 3.6 ft), is interpreted as an over bank

Steve Johnson's floating plant on Burwash Creek in 2014.



Steve Johnson's operation on Burwash Creek (2014), looking downstream.

deposit consisting of finely laminated, slightly oxidized fine sandy silt. Unit 3, from 1.1 to 2.1 m (3.6 to 6.9 ft), consists of interbedded medium to fine sand between 8 and 22 cm thick, with dense, fine sand beds shallowly dipping downstream. A highly oxidized and weathered band of pebbles is present at the upper contact. Unit 4, from 2.1 to 4.1 m (6.9 to 13.4 ft), comprises cobble-pebble gravel with 40% silty-coarse sand matrix, some open work structure, and beds dipping moderately downstream. Unit 5, from 4.1 to 6.1 m (13.4 to 20.0 ft), resembles Unit 2 and consists of fine-grained laminated sandy silt, but coarsens upwards with discontinuous beds of granule-pebble gravel and a sharp, planar bottom contact. Unit 6, from 6.1 to 6.8 m (20.0 to 22.3 ft), is a fining-upward, poorly-sorted pebble to cobble gravel with 50% coarse sand matrix and discontinuous beds of fine to medium sand. Unit 7, from 6.8 to 7.4 m (22.3 to 24.3 ft), is a fine-grained laminated layer similar to Units 2 and 5. Unit 8, at the top of the cut from 7.4 to 9.8 m (24.3 to 32.2 ft), consists of poorly-sorted sandy gravel with rare boulders. The lowermost gravels were targeted as pay on the left limit, and 1.8 to 2.4 m (6 to 8 ft) of gravel and 0.9 m (3 ft) of bedrock were sluiced.

Bedrock Geology Bedrock is tuff, breccia, argillite, agglomerate, basalt, andesite, argillite, and/or sandstone (Dodds and Campbell, 1992).

Gold Characteristics Gold is flat but nuggety. The largest nugget recovered is 8.5 oz. Fineness is 860.

Burwash, a tributary of Kluane

115G/06 2013: 61°22'06"N, 139°20'04"W

Aurem Alliance Ltd., 2006-2014

Water License: PM10-007 (Active 2020)
Water License: PM13-030 (Active 2018)
Active Producer (2010-2014) **Operation no. 219**

Location Burwash Creek, 1.2 km upstream from the mouth of Tatamagouche Creek.

Work History and Mining Cuts Aurem Alliance holds two water licenses, PM13-030 on lower Burwash Creek, and PM10-007 upstream of Tatamagouche Creek confluence. No activity occurred under PM13-030 from 2010 to 2014, while all activity was focused upstream under PM10-007. From 2010 to 2013, sluicing and stripping occurred on the right limit. In 2014, five miners operated a daily ten to twelve hour shift, mining a 165 m (540 ft) long bench cut on the right limit.

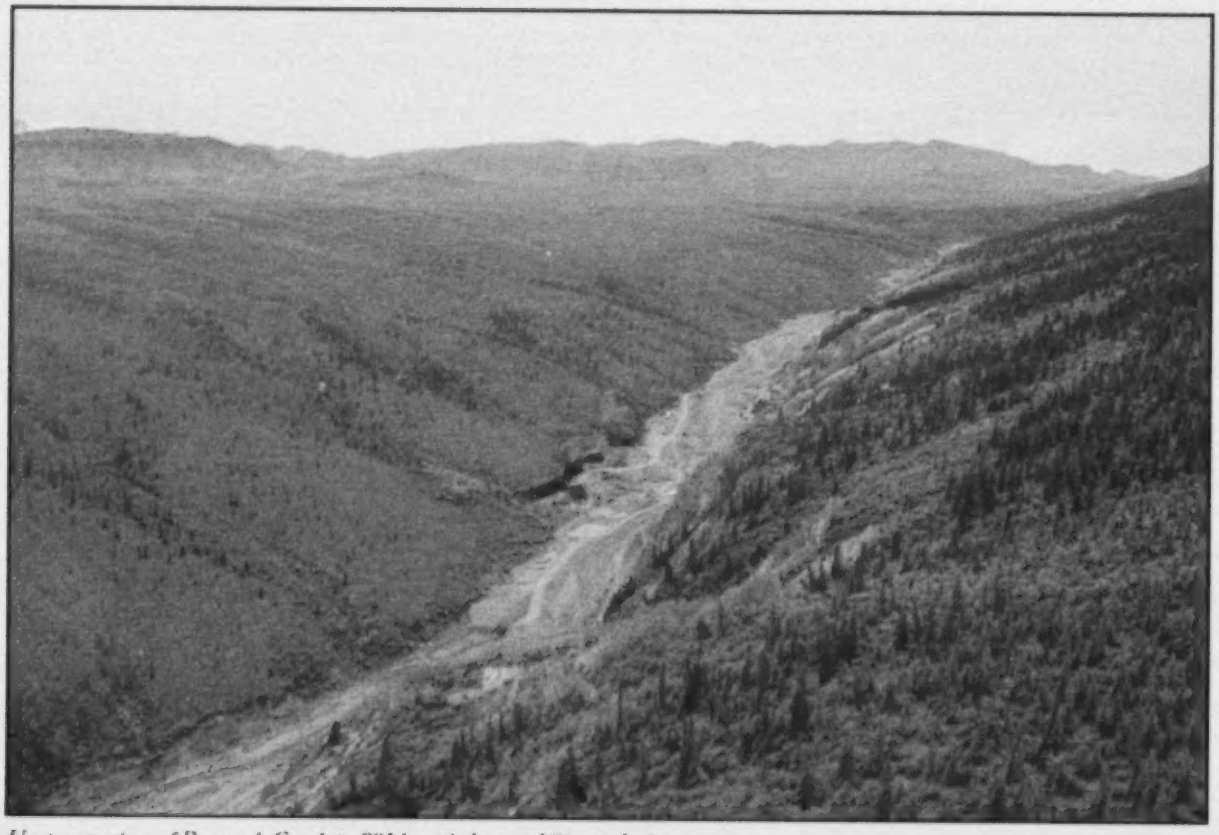
Equipment and Water Treatment Equipment present on site in 2014 included a Hitachi 700 excavator, a Caterpillar 365B excavator, a Caterpillar 345 excavator, a Caterpillar 980 wheel loader, a Caterpillar 988 wheel loader as backup, a Caterpillar D7E and D9L excavator, a John Deere 310G loader backhoe, and a rock truck. The wash plant consisted of a Derocker that classified to 2" minus and processed a maximum of 100 loose cubic yards (76 m^3) of material per hour. Sluice runs were 5 ft by 30 ft long and included boil boxes, hydraulic riffles, and expanded metal, all lined with unbacked miner's moss. Water is acquired from Burwash Creek and effluent is settled in a series of four settling ponds prior to discharge back into Burwash Creek.

Surficial Geology and Stratigraphy The 2014 right limit bench cut exposed three units. Unit 1, located at the base of the section, is pay gravel which varied in thickness from 1.5 to 3 m (4.9 to 9.8 ft) due to an undulating bedrock contact. The gravel is slightly imbricated towards the east (downstream) and consists of 25% boulders, 40% cobbles, and 35% pebbles, with a minimal matrix comprising coarse sand. Unit 2 consisted of 2.0 m (6.6 ft) of frozen interbedded medium to coarse sand and pebble-gravel, with organic beds 5 to 10 cm thick. Unit 3 caps the section and comprises up to 4 m (13 ft) of silty, ice-rich muck with approximately 25% visible ice in sheets and veins, and minor fine sand and woody debris. Sluiced material included 3.0 to 6.1 m (10 to 20 ft) of gravel and 0.6 to 0.9 m (2 to 3 ft) of bedrock.

Bedrock Geology Bedrock is highly fractured chert.

Gold Characteristics Gold greatly varies in size and shape from flat to coarse, with some nuggets. Fineness is 867.

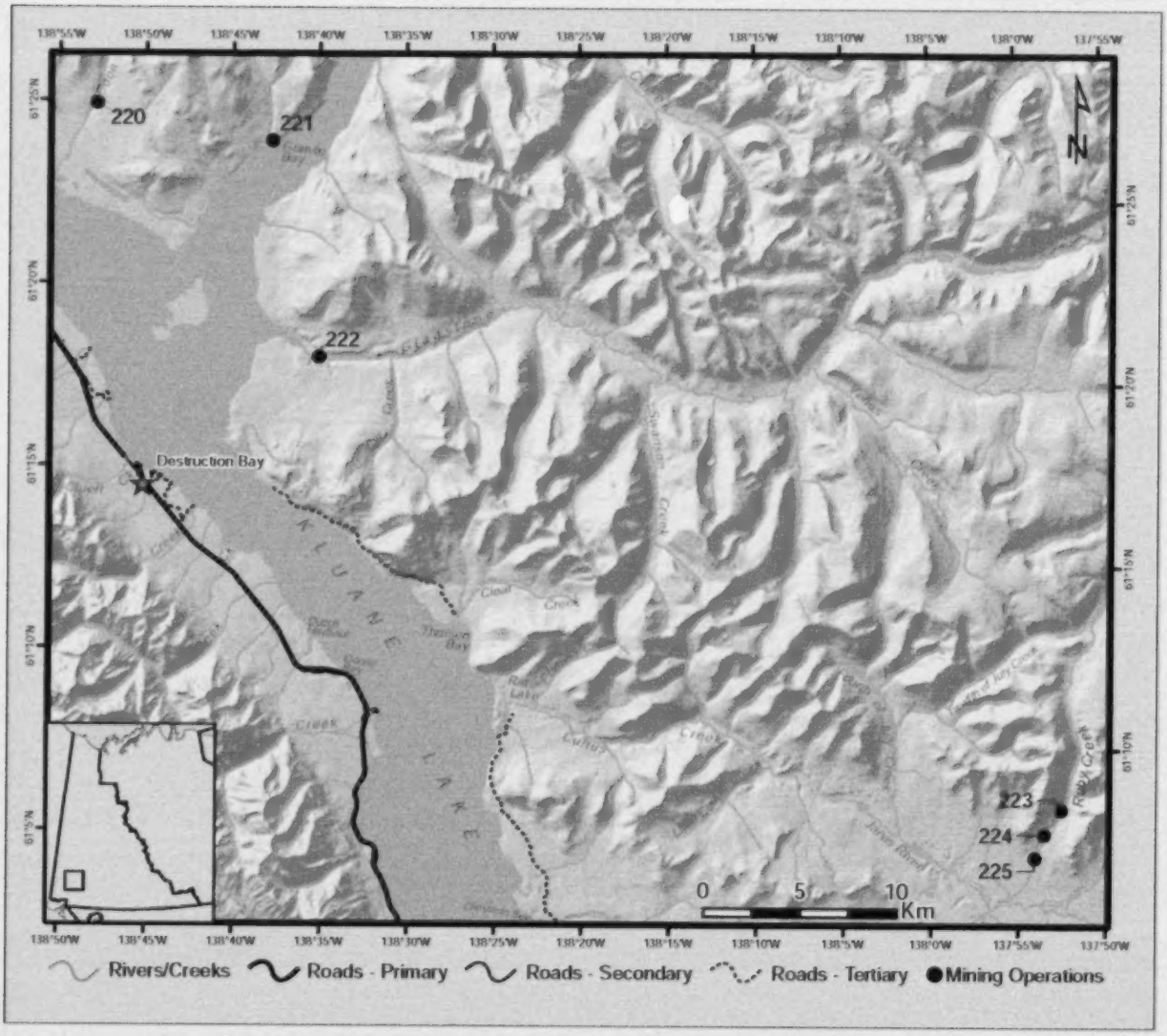
Aurem Alliance's 2014 mining activity on the right limit of upper Burwash Creek.



Upstream view of Burwash Creek in 2014, with Aurem Alliance Ltd. operation.

GLADSTONE
PLACER AREA

SITES 220 - 225



LEGEND

220 ..... Copper Joe Exploration Ltd.
221 ..... Dunford, N.
222 ..... Tic Exploration
223 ..... Brewster, D.
224 ..... MacKinnon, B.
225 ..... Bjork, B.D.

Coon, a tributary of Kluane Lake

115G/07 2013: 61°25'02"N, 138°52'32"W

Copper Joe Exploration Ltd., 2013

Water License: PM12-005 (Active 2017)

Active Producer (2013) **Operation no. 220**

Location Coon Creek, a tributary of Kluane Lake, on the east side of Brooks Arm, approximately 4 km upstream from the mouth of the creek, near Sandspit Point on Kluane Lake.

Work History and Mining Cuts Copper Joe Exploration's first season on Coon Creek was in 2013, when they conducted stripping and sluicing on the left and right limits adjacent to the floodplain. Activity in 2014 is unknown.

Equipment and Water Treatment An excavator was stationed at camp in 2014.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is granodiorite, quartz monzonite, and quartz diorite (Muller, 1966).

Gold Characteristics Not reported.

Downstream view of Copper Joe Exploration's operation on Coon Creek in 2014.

Unnamed, a tributary of Kluane Lake

115G/07 2014: 61°24'29"N, 138°42'12"W

Dunford, N., 2013

Water License: PM05-499 (Active 2016)
Active Producer (2013) **Operation no. 221**

Location Unnamed tributary on the west side of Talbot Arm, Kluane Lake, opposite Granite Bay.

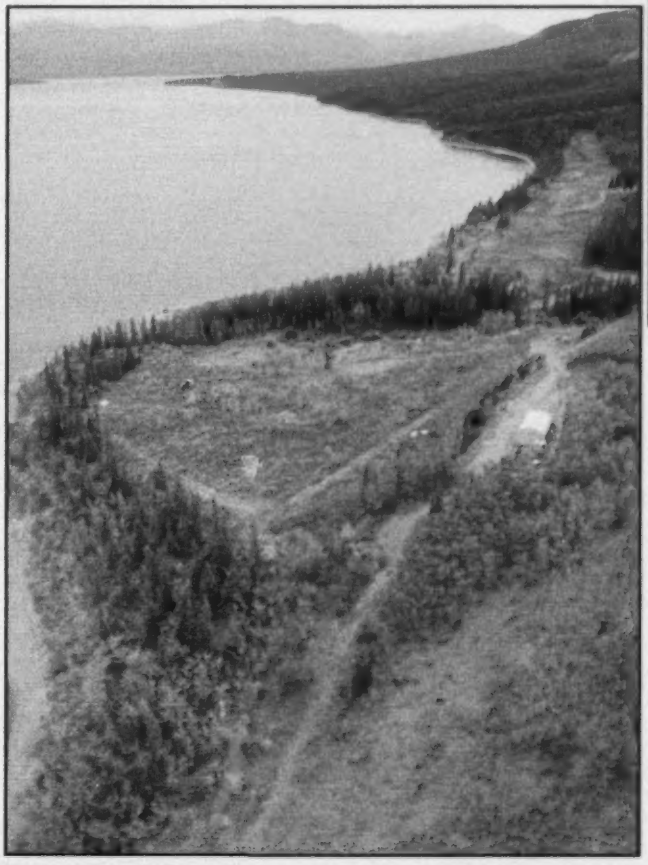
Work History and Mining Cuts A base camp has been established at the mouth of the tributary. Stripping appears to have occurred on the alluvial fan at the mouth of the tributary, and to the south-west, on a glaciofluvial terrace that parallels the shoreline of Talbot Arm.

Equipment and Water Treatment In 2014 an excavator and small dozer were stationed at base camp.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is granodiorite and quartz monzonite (Muller, 1966).

Gold Characteristics Not reported.



Mr. Dunford's operation at the mouth of an unnamed tributary of Talbot Arm in 2014.

Gladstone, a tributary of Kluane Lake

115G/07 2008: 61°18'42"N, 138°38'16"W

Tic Exploration Ltd., 1992-2010, 2012-2013

Water License: PM06-510 (Active 2015)
Water License: PM05-481 (Active 2015)
Active Producer (2010, 2012-2013) **Operation no. 222**

Location Gladstone Creek

Work History and Mining Cuts Tic Exploration mined at various locations on Gladstone Creek in 2010, 2012 and 2013. No activity was recorded in 2011 and no activity occurred in 2014. In 2010, sluicing occurred on the left limit of Gladstone Creek with two wash plants, the first located against the valley wall and the second situated closer to the creek. The left limit of the valley, slightly downstream of Cyr Creek, was stripped for future mining. The left limit of Gladstone Creek, downstream from camp was mined in 2012. Stripping and sluicing occurred upstream of camp in 2013.

Tic Exploration's stripping and sluicing activity on Gladstone Creek in 2013 (Photo credit: Justin Hooper).

Equipment and Water Treatment Equipment included three Caterpillar 330 excavators, a Caterpillar 325 excavator, a Caterpillar 350 excavator, two Caterpillar D9H bulldozers, and a Caterpillar D10N bulldozer. Two wash plants were located on site: a 5 ft diameter floating trommel with 6 by 6 ft sluice run and a 30" wide tailings conveyor; and a 6 ft diameter floating trommel with a 9 by 6 ft sluice run and a 36" wide tailings conveyor.

Surficial Geology and Stratigraphy Pay gravels are from two to eight metres thick and are derived from reworked till. The deposits overlie till and clay which form a false bedrock layer along the lower reaches. Further upstream the deposits lie on bedrock.

Upstream view of lower Gladstone Creek. Tic Exploration's base camp is situated in the background on the right limit (Photo credit: Panya Lipovsky).

Bedrock Geology Late Cretaceous Kluane Schist underlies lower Gladstone Creek, while the upper reaches are underlain by the Paleocene Ruby Range batholith (Israel *et al.*, 2011).

Gold Characteristics Gold varies between rough, smooth, and flat, and has a fineness of 830.

Ruby, a tributary of Jarvis

115H/04 2014: 61°08'14"N, 137°53'06"W

Brewster, D., 1998-2014

Water License: PM06-544 (Active 2011)
Water License: PM11-046 (Active 2022)
Active Producer (2010-2014) **Operation no. 222**

Location Ruby Creek, upper

Work History and Mining Cuts Mr. Brewster was active on the left limit in 2010. Mr. Bjork partnered with Mr. Brewster in 2010 and mined primarily the right limit. Sluicing occurred in 2012 but no further information was reported. Mining and reclamation continued on the left limit throughout the 2013 season. Two cuts were mined in 2014; one on upper Ruby Creek, and the other approximately 600 m (1968 ft) upstream from Mr. MacKinnon's operation. Approximately 20,000 yd^3 (15291 m^3) was sluiced per year.

Equipment and Water Treatment Equipment present on site in 2014 included a Caterpillar 325B excavator, a Caterpillar 516 skidder, a Caterpillar D6C bulldozer and a Caterpillar D6 bulldozer. The wash plant consisted of a 4 by 6 ft Clemro vibrating grizzly wash plant with 3/4" screen, a 10 ft run of punch plate and a 16" by 3 ft riffle run. The wash plant processed 40 loose cubic yards (30 m^3) of gravel per hour, and water was acquired from Ruby Creek and settled through a series of three ponds downstream. A shaker table was used during clean-ups.

Surficial Geology and Stratigraphy A right limit cut exposed in 2014 consists of 1.8 m (5.9 ft) of cobble-boulder pay gravel overlying a compact frozen till. The pay gravel comprises 25% silty sand matrix and 75% clasts with a size distribution of 30% pebbles, 40% cobbles, and 30% boulders. Boulder lithologies are primarily schist and intrusive. The underlying till unit ranges in thickness from 1.5 m (5 ft) on the right limit to 7.6 m (25 ft) on the left limit. The till comprises 40% silty sand matrix and 60% clasts with a size distribution of 50% pebbles, 40% cobbles, and 10% boulders. Angular clasts are abundant in the till. In 2013, up to 2.4 m (8 ft) of gravel was mined down to the contact with the till.

Bedrock Geology Bedrock is mapped as Late Cretaceous Kluane muscovite schist (Israel *et al.*, 2011). Bedrock outcropped in the creek near the right limit cut described above, and was encountered much deeper on the left limit.

Exploration Potential Pre-glacial Ruby Creek gravel may underlie the till false bedrock. In addition, side pay prospects on both the left and right limit have not been exploited in Ruby Creek valley.

Gold Characteristics Gold is shiny and primarily flour-sized, with a fineness of 820.

Mining activity at Mr. Brewster's operation on upper Ruby Creek in August 2014.

Mr. Bjork mining Mr. Brewster's ground on upper Ruby Creek in 2014.

RUBY, A TRIBUTARY OF JARVIS

115H/04 2014: 61°07'31"N, 137°53'57"W

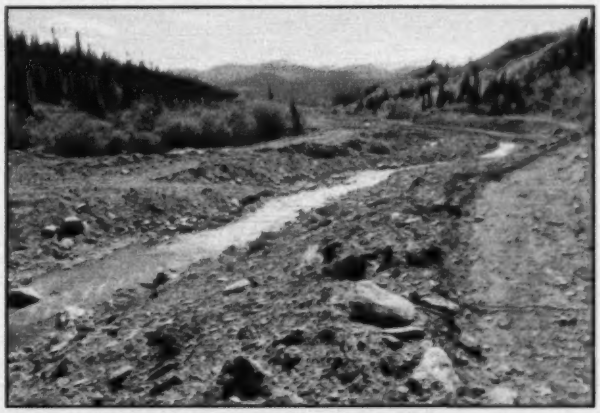
MacKinnon, B., 1998-2014

Water License: PM97-018 (Expired 2010)
Water License: PM10-002 (Active 2020)
Active Producer (2010-2014) **Operation no. 224**

LOCATION Ruby Creek, mid

WORK HISTORY AND MINING CUTS From 2010 to 2012, Mr. MacKinnon operated a one to two-personnel camp, while in 2013 and 2014 he operated by himself. During this time, his mining efforts were focused near his camp on the left limit where thicker gravel and higher grades were encountered. He also explored some old timer drifts up to 21 m (70 ft) long, located upstream from his base camp.

EQUIPMENT AND WATER TREATMENT Equipment present onsite in 2014 included a John Deere 790 excavator, a John Deere 544 loader, and a John Deere 750 bulldozer. The wash plant consisted of a 5 ft diameter trommel with a 4 by 6 ft sluice run lined with expanded metal and hydraulic riffles.



Mr. MacKinnon's mining location from 2010 to 2014, near his base camp on Ruby Creek.

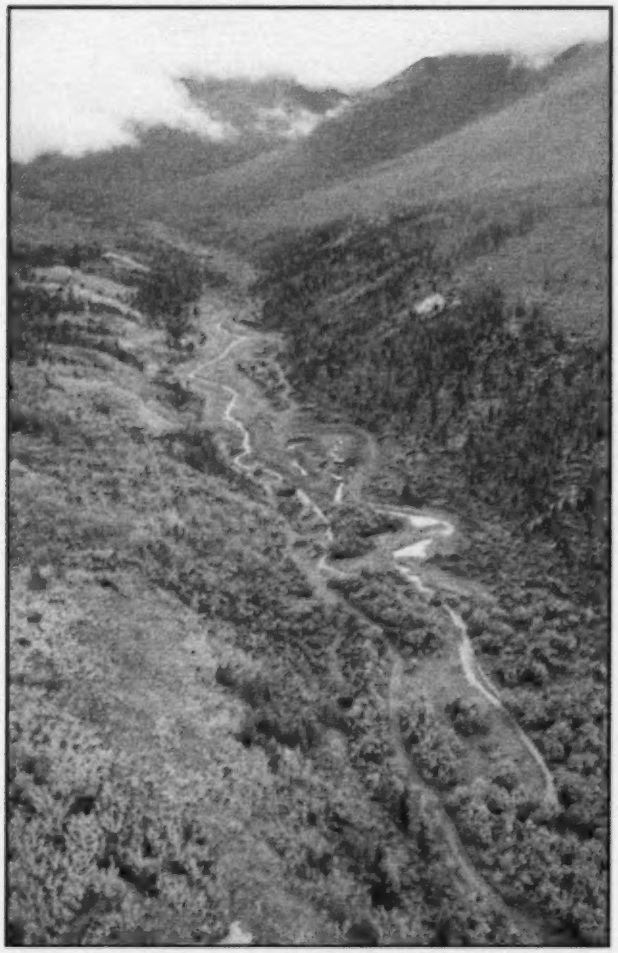
Downstream view of Mr. MacKinnon's operation in 2014, with his camp visible in the lower left corner.

Surficial Geology and Stratigraphy Exposures near Mr. MacKinnon's camp consist of an impermeable clay unit overlain by 3.0 m (10 ft) of a coarse cobble-dominated sandy gravel and capped by 0.6 to 0.9 m (2 to 3 ft) of sand. Up to 3.0 m (10 ft) of gravel was sluiced, with the highest grades yielded from clay-rich gravel extracted from the base of the unit. The clay unit acts as a false bedrock surface, so no mining occurred below it.

Bedrock Geology Bedrock is mapped as Late Cretaceous Kluane muscovite schist (Israel *et al.*, 2011) and outcrops along the valley side and in the creek in several locations.

Exploration Potential see previous entry.

Gold Characteristics 5% jewelry gold was recovered with rare nuggets that averaged 5 to 6 grams. The average fineness was 845.



Upstream view of Ruby Creek in 2014 with Mr. MacKinnon's operation shown in the center of the photo, and Mr. Brewster and Mr.Bjork's operation farther upstream in the background.

Ruby, a tributary of Jarvis

115H/04 2013: 61°06'51"N, 137°54'22"W

Bjork, B.D., 2010-2013

Water License: PM09-656 (Expired 2020)
Active Producer (2010-2013) **Operation no. 225**

Location Ruby Creek, lower

Work History and Mining Cuts Some mining activity occurred under PM09-656 in 2010. From 2011 to 2013, Mr. Bjork operated under Mr. Brewster on upper Ruby Creek. In 2011, Mr. Bjork sluiced on Mr. Brewster's ground, upstream from Mr. MacKinnon. In 2013, stripping occurred in two locations on lower Ruby Creek, north and south of Mr. Bjork's camp. In 2014 Mr. Bjork continued mining with Mr. Brewster upstream, with no reported activity under PM09-656.

Equipment and Water Treatment Mr. Bjork's equipment and wash plant are located on Mr. Brewster's ground on upper Ruby Creek.

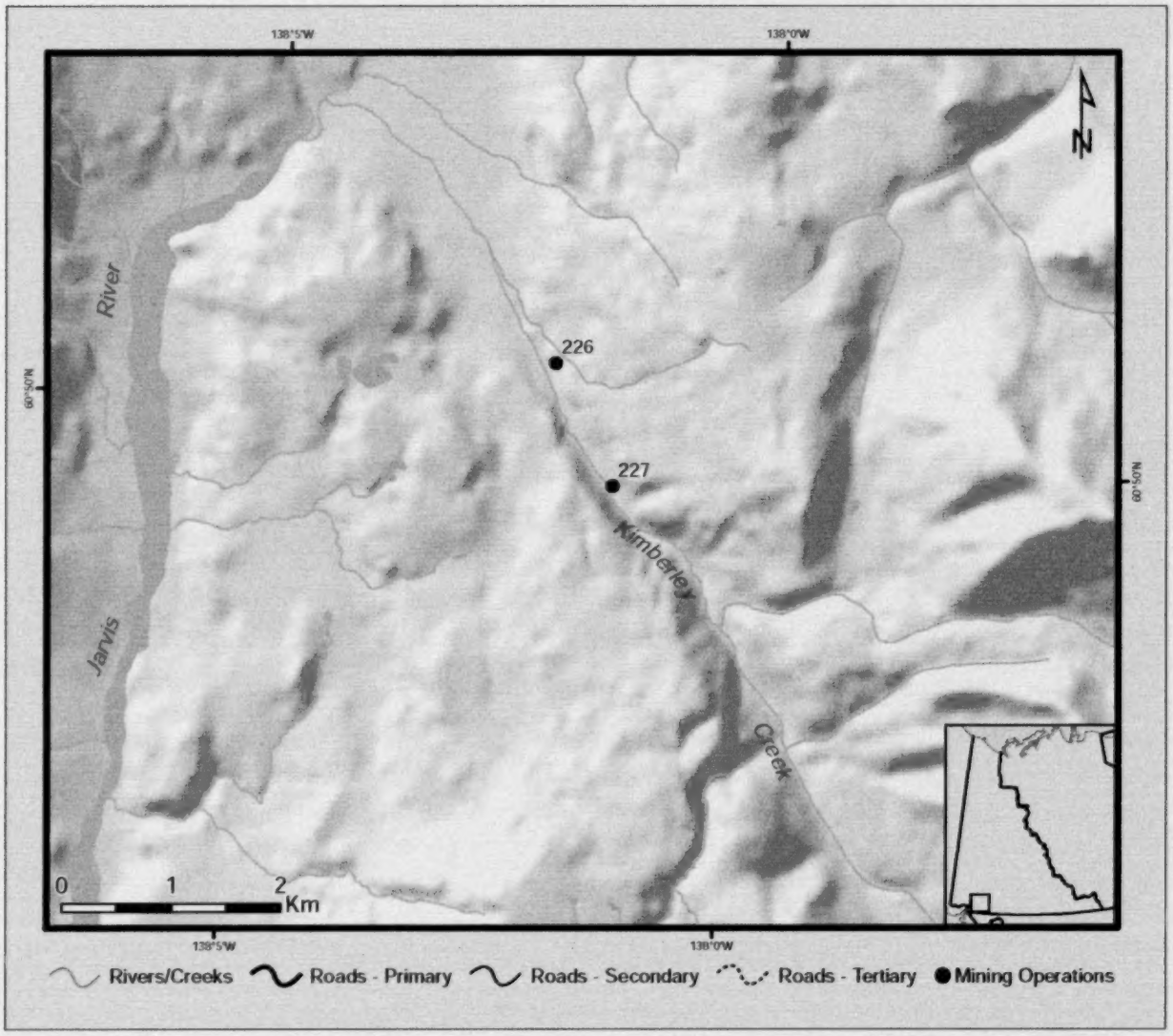
Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is cordierite-staurolite-hornfels and quartz-selenium-calcite-schist (Templeman-Kluit, 1974b).

Gold Characteristics Not reported.

KIMBERLEY
PLACER AREA

SITES 226 - 227



LEGEND

226 ..... Sawyer, P. and C.
227 ..... Brueckner, M.

KIMBERLEY, A TRIBUTARY OF JARVIS

115B/16 2013: 60°50'20"N, 138°02'03"W

Sawyer, P and C., 1980-2011
Moulton, K., 2013

Water License: PM06-518 (Closed 2010)
Water License: PM09-648 (Active 2020)
Active Producer (2010-2011, 2013) **Operation no. 226**

LOCATION Kimberley Creek, approximately 4.2 km above its confluence with the Jarvis River.

WORK HISTORY AND MINING CUTS In 2010, the operator mined on a right limit bench, systematically stripping the material up hill for convenient reclamation. A ditch on the right limit was excavated in 2011 in an attempt to locate bedrock and small test runs of material were processed. No activity occurred on site from 2012 to 2013 and the water license was reassigned from the Sawyers to Mr. Moulton in late 2013. The status of activity in 2014 is unknown.

EQUIPMENT AND WATER TREATMENT Equipment noted on site in 2010 included an excavator. Effluent was directed through a drain into a pond, and from there it filtered through the ground producing no discharge.

SURFICIAL GEOLOGY AND STRATIGRAPHY Not reported.

BEDROCK GEOLOGY Bedrock is decomposed schist.

GOLD CHARACTERISTICS Gold is chunky and has a fineness of 860.

KIMBERLEY, A TRIBUTARY OF JARVIS

115B/16 2014: 60°49'46"N, 138°01'23"W

Brueckner, M., 2011-2014

Water License: PM04-442 (Active 2015)
Active Producer (2011-2014) **Operation no. 227**

LOCATION Kimberley Creek, approximately 4.5 km above its confluence with the Jarvis River.

WORK HISTORY AND MINING CUTS Water license PM04-442 was reassigned to Mr. Brueckner in 2010, and 2011 was his first year of active mining. Mr. Brueckner and another miner operated on the right limit in 2011, working up the gulch above the bedrock contact. Activity on the right limit continued in the same location in 2012 and 2013, but moved

Downstream view of uppermost claims under PM09-648 in 2014, with historic test pits in foreground.

slightly downstream each year. The 2013 season was short due to equipment difficulties. A test pit was dug in the center of the Kimberley Creek valley in 2014, and a previously mined right limit cut was continued.

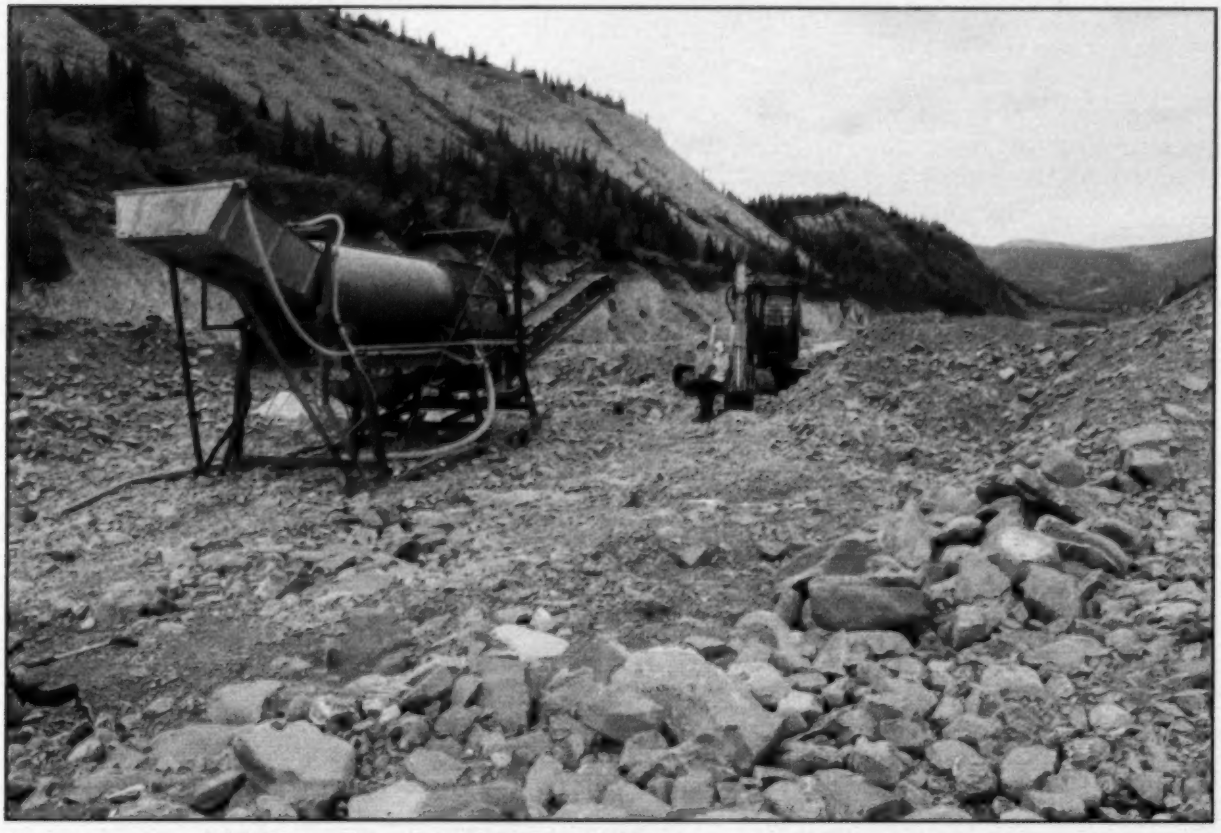
Equipment and Water Treatment Equipment present in 2014 included a Samsung SE130LC excavator and a trommel wash plant approximately 5 ft in diameter by 12 ft long with a 1" screen and 6 ft long sluice run. With the trommel and high banker they processed 15 to 20 loose cubic yards (12 to 15 m^3) of gravel per hour. Water was acquired from Kimberley Creek and settled in a series of downstream ponds on the right limit. Clean-ups were conducted using a high banker.

Surficial Geology and Stratigraphy The right limit cut exposes cobble-boulder gravel with a maximum clast size of 1 m (3.3 ft), sandy-silt matrix and minor coarse sand-grit lenses. The general stratigraphy described throughout the reporting period consists of 1 m (3.3 ft) of overburden above 2 m (6.6 ft) of pay overlying a resistant clay layer which is interpreted as weathered bedrock.

Bedrock Geology Bedrock is conglomerate on the right limit, and diorite and gabbro on the left limit. The creek is located on the Denali fault.

Gold Characteristics Gold is fine with minor nuggets. The average nugget weighs 0.2 g, and the largest nugget recovered is 9 g.

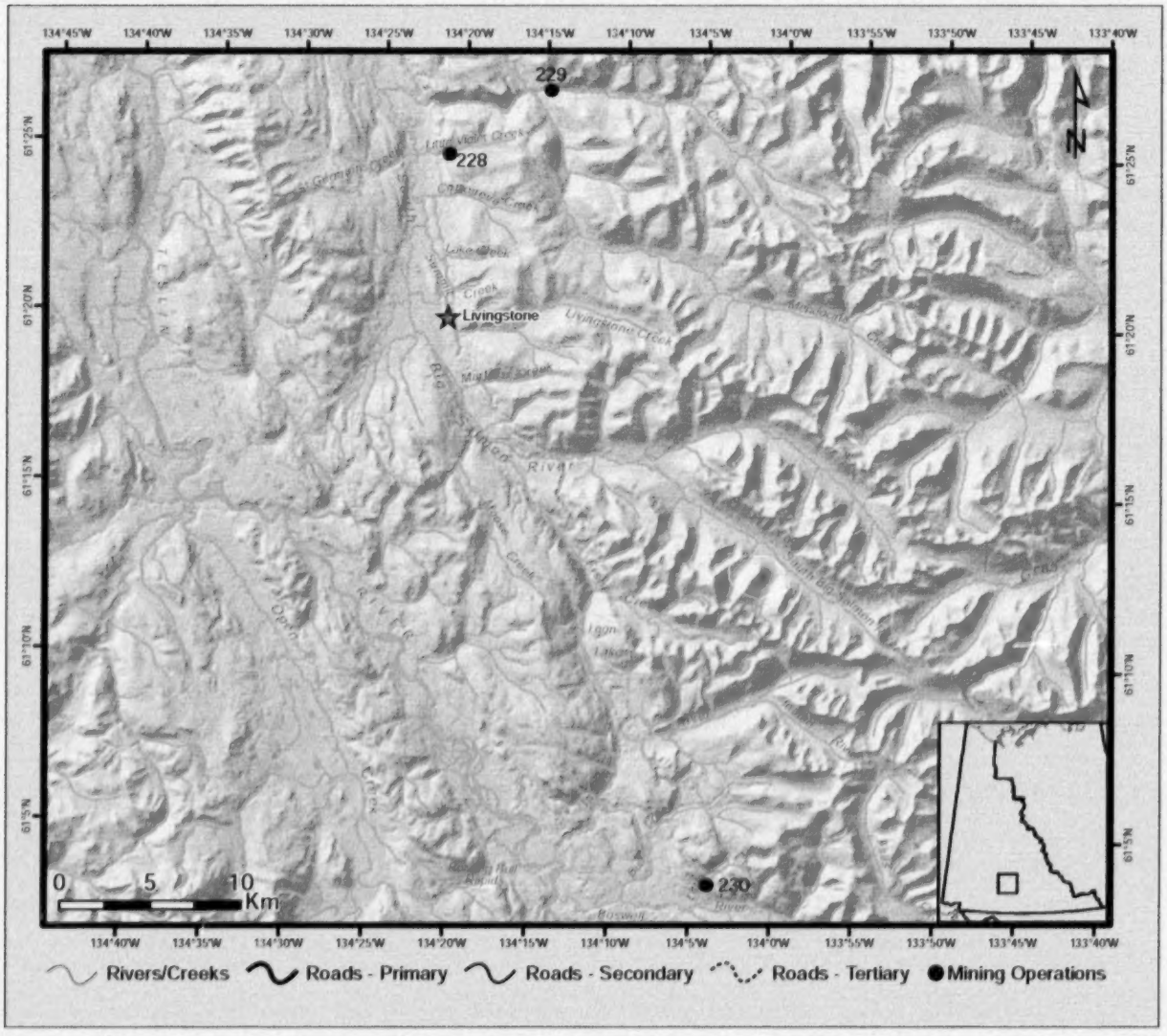
Mr. Brueckner's active operation on Kimberley Creek in 2014.



Downstream view of Mr. Brueckner's wash plant and test pit in 2014.

LIVINGSTONE
PLACER AREA

SITES 228 - 230



LEGEND

228 ..... Agamemnon Fishing Co. Ltd.
229 ..... Swaim, S.
230 ..... Sawtooth Mining & Exploration Ltd.

Little Violet, a tributary of South Big Salmon

105E/08 2008: 61°24'51"N, 134°20'60"W

Agamemnon Fishing Co. Ltd., 1998-2009, 2010-2012

Water License: PM08-609 (Active 2019)

Active Producer (2010-2012) **Operation no. 228**

Location Little Violet Creek.

Work History and Mining Cuts Three miners and one camp personnel operated a daily eleven hour shift from 2010 and 2012. Throughout 2010, monitoring occurred to remove overburden and reach pay gravel, with no material sluiced until 2011. One continuous cut was mined in 2011, reclaiming the cut as they mined upstream. Twenty days of sluicing occurred each year.

Equipment and Water Treatment Equipment included a Hitatchi UH16 excavator and Poclain 400 shovel used to mine pay and load the two Volvo 861 rock trucks. A Caterpillar 966C excavator fed the plant and a Caterpillar 950 removed the tailings. The wash plant consisted of a Torgeson vibrating deck which classified material to less than 3", which was then sorted into greater and less than 1/4" in size by a 30" by 8 ft screen. The material smaller than 1/4" was diverted to a run through a 20" Knelson bowl concentrator and returned to the head of the sluice runs which were 2 ft wide and 25 ft long. The wash plant was gravity-fed and capable of processing 50 loose cubic yards (38 m^3) of gravel per hour. A creek diversion into a holding pond was required for water acquisition with 24 hours allowing for three to six hours of sluicing. Effluent was treated out of stream in a large pond measuring 305 by 610 m (1000 by 2000 ft). Clean-ups were conducted daily.

Surficial Geology and Stratigraphy The stratigraphic section is 9.1 m (30 ft) of glacial till overlying 30.5 m (100 ft) of gravel. The pay gravel included the bottom 3.0 m (10 ft) of gravel and up to 0.6 m (2 ft) of bedrock. Preservation of pre-glacial pay gravel in Little Violet Creek is the result of fortuitous glacial history. A glacier in the South Big Salmon River valley would have dammed Little Violet Creek valley resulting in the deposition of glacial lake silt and sand on the pre-glacial gravel. As the ice thickened and glaciated the entire landscape the pre-glacial pay gravel was protected under the lake sediment from sub-glacial erosion. This is a common stratigraphy in the Livingstone area creeks.

Bedrock Geology Bedrock is calcite-biotite schist, amphibolite, gneiss, actinolite-paragonite-calcite-biotite schist, phyllite, quartzite, and ultramafic rocks (Templeman-Kluit, 1984).

Gold Characteristics Gold is coarse and has fineness from 860 to 875.

Dycer, a tributary of Mendocina

105E/08 2013: 61°26'49"N, 134°14'49"W

Swaim, S., 2013

Water License: PM05-497 (Active 2018)

Active Producer (2013) **Operation no. 229**

Location Dycer Creek.

Work History and Mining Cuts The only recorded activity under PM05-497 occurred in 2013; four test pits were identified.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is quartzite and quartz-muscovite-schist (Templeman-Kluit, 1984).

Gold Characteristics Not reported.

Little Bear, a tributary of Boswell River

105E/01 2013: 61°03'32"N, 134°03'50"W

Sawtooth Mining and Exploration Ltd., 2014

Water License: N/A

Active Producer (2014) **Operation no. 230**

Location Little Bear.

Work History and Mining Cuts Exploration occurred in 2013 and 2014 with no specific work history known.

Equipment and Water Treatment Not reported.

Surficial Geology and Stratigraphy Little Bear Creek has a history of hand mining that dates back to the discovery of the Livingstone district in the early 1900s. A second phase of hand mining likely took place during the 1930s. The relatively small stream flows through a narrow canyon near

its mouth and forms an alluvial fan deposit in the Boswell River valley. Old-timer workings are visible in the canyon and near the apex of the alluvial fan. Glacial ice flow was perpendicular to Little Bear Creek and therefore pre-glacial deposits were likely buried rather eroded in the valley.

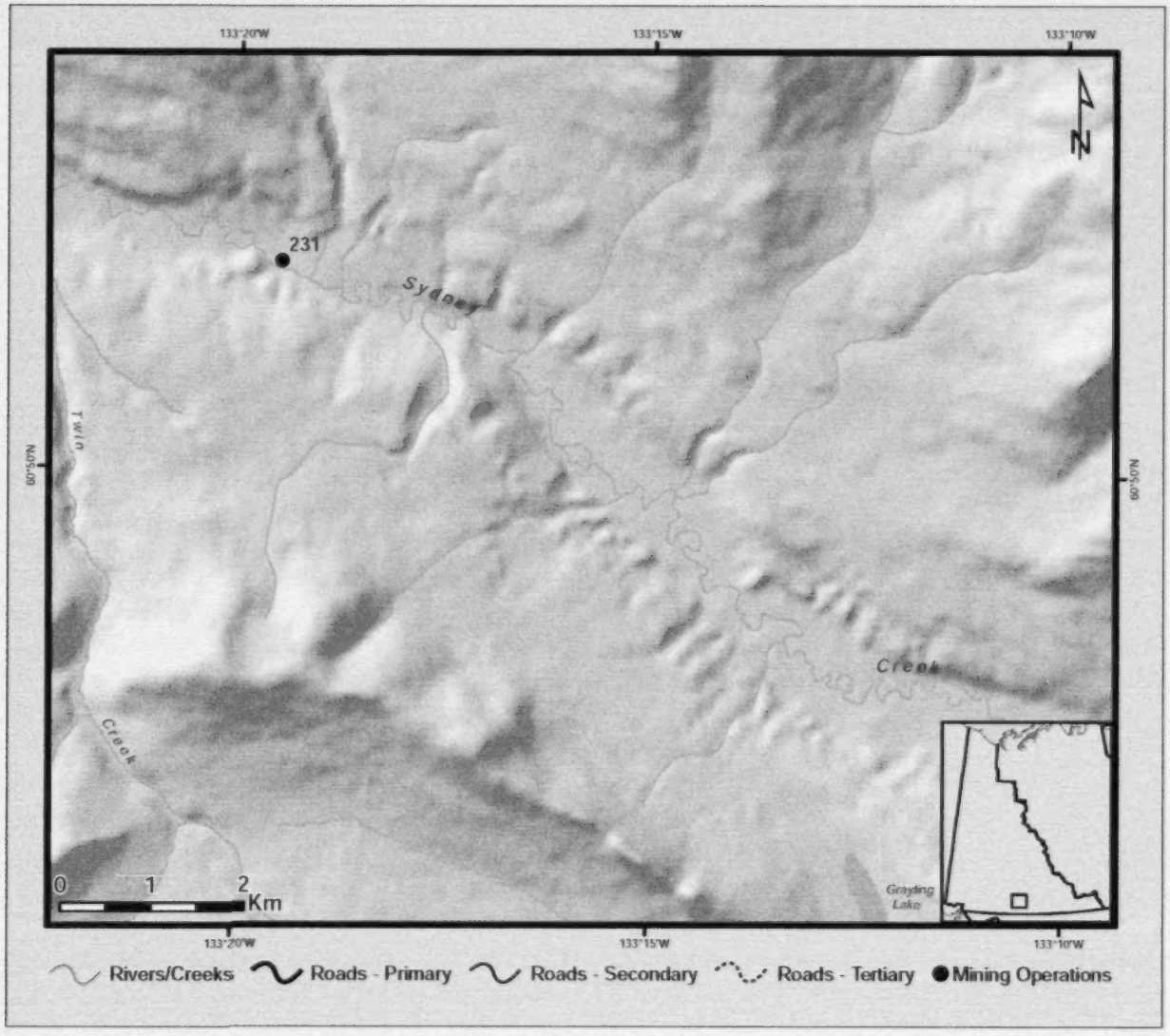
Bedrock Geology Bedrock is dacite, basalt, and sandstone (Templeman-Kluit, 1984).

Gold Characteristics Not reported.

A view looking upstream of the canyon on Little Bear Creek. The stacked cobbles on the right hand side of the stream are some of the old-timer workings in Little Bear Creek.

NISUTLIN
PLACER AREA

SITE 231



LEGEND

231 ..... Hrehirchek, D. & Cook, C.

Sydney and Iron, a tributary of Nisutlin

105C/14 2013: 60°51'12"N, 133°19'29"W

Hrehirchek, D. and Cook, C., 2012-2013

Water License: PM07-577 (Active 2018)

Active Producer (2012-2013) **Operation no. 231**

Location Sydney and Iron creeks.

Work History and Mining Cuts In 2012 settling ponds were constructed and equipment was present on site; specific work history unknown. Two areas, one south and another east of camp, were stripped in 2013. Sluicing occurred throughout the season.

Equipment and Water Treatment Equipment marshalled at camp in 2012 included two excavators, wheel loader, bulldozer, and dump truck. Water was 100% recycled.

Surficial Geology and Stratigraphy Not reported.

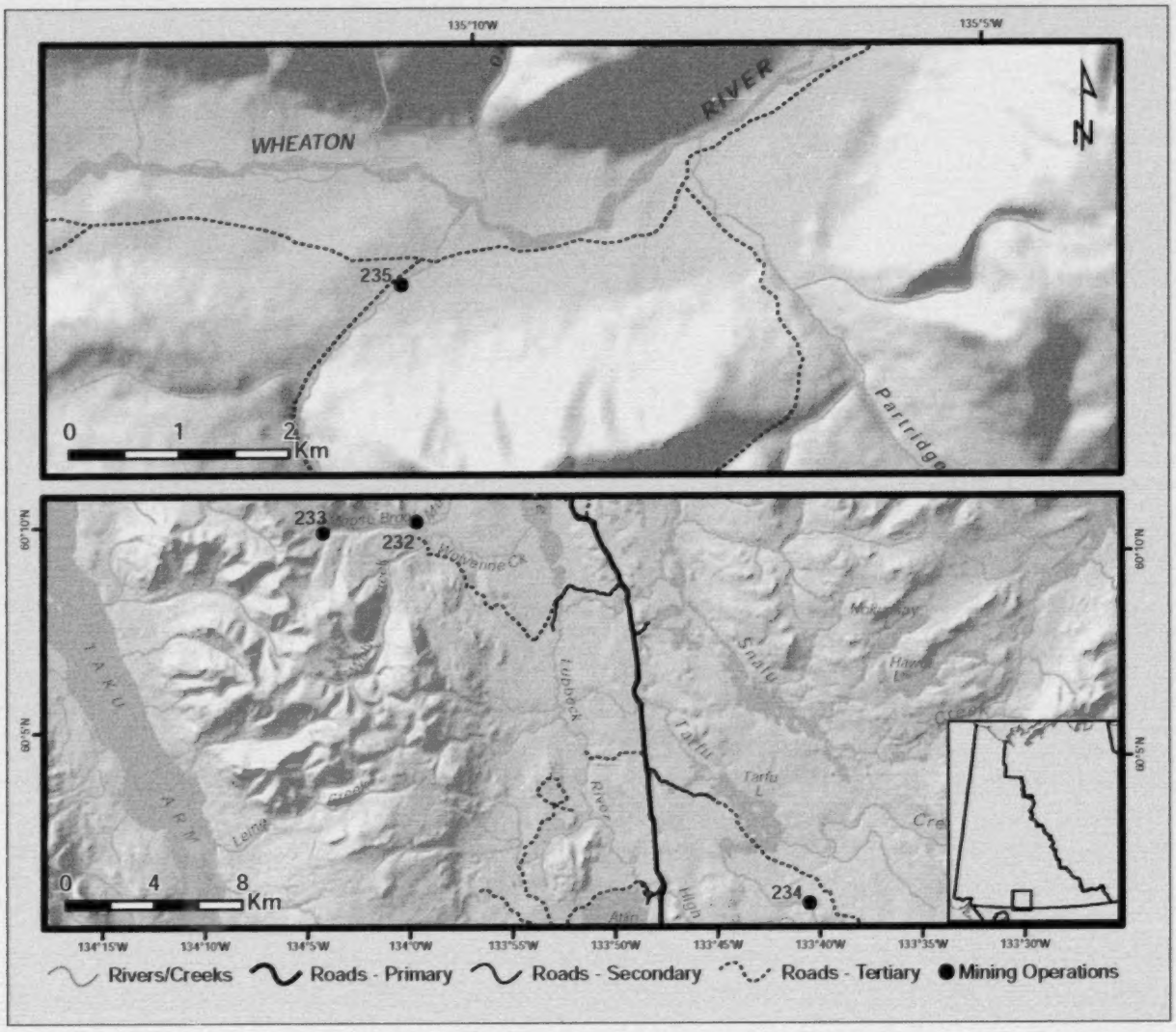
Bedrock Geology Bedrock is biotite-schist, amphibolite, and gneiss (Gordey and Stevens, 1994).

Gold Characteristics Not reported.

Mr. Hrehirchek's operation on Sydney and Iron creeks in 2012 (Photo credit: Sevn Bohnet).

WHITEHORSE SOUTH
PLACER AREA

SITES 232 - 235



LEGEND

232 ..... Tusk Exploration Ltd.
233 ..... Kabanak, T.
234 ..... Black Mountain Mining
235 ..... Wold, B.

Moose Brook, a tributary of Little Atlin

105D/01 2013: 60°10'23"N, 134°00'06"W

Tusk Exploration Ltd., 2005-2009, 2011-2014

Water License: PM04-357 (Active 2014)
Active Producer (2011-2014) **Operation no. 232**

Location Moose Brook Creek, east side of Jubilee Mountain, tributary of Little Atlin Lake.

Work History and Mining Cuts Stripping occurred in 2011 at the top end of the property and continued in 2012 but on the left limit of the creek. A small crew was present onsite in 2013 operating on the upper claims, and hauling material to the left limit for sluicing. In 2014 stripping and sluicing occurred and a large test pit 7.6 m (25 ft) deep was excavated.

Equipment and Water Treatment Equipment noted in 2012 included Komatsu 450 loader, Caterpillar 966 wheel loader, Caterpillar 235 excavator, bulldozer, two haul trucks, and trommel wash plant. Equipment on-site in 2013, as seen in the property photo, included two John Deere excavators, a loader, rock truck, bulldozer and trommel wash plant.

Surficial Geology and Stratigraphy Approximately 3.0 to 6.1 m (10 to 20 ft) of coarse gravel and overburden was stripped in 2012.

Bedrock Geology Bedrock is breccia and limestone (Wheeler, 1961).

Gold Characteristics Not reported.

Moose Brook, a tributary of Little Atlin

105D/01 2013: 60°10'03"N, 134°04'40"W

Kabanak, T., 2013-2014

Water License: PM12-019 (Active 2013)
Active Producer (2013-2014) **Operation no. 233**

Location Moose Brook Creek and unnamed right limit tributary of Moose Brook Creek, tributaries of Little Atlin Lake.

Work History and Mining Cuts First year of recorded activity under PM12-019 was in 2013 where Mr. Kabanak

Active sluicing in 2013 at Tusk Exploration on Moose Brook Creek (Photo credit: Justin Hooper).

A view to the west of the test pit excavated in the Moose Brook Creek fluvial gravel.

conducted testing near the upper forks of Moose Brook Creek. The exploration was focused on the left limit. An area 10 by 10 m (33 by 33 ft) was stripped to access pay gravel, and then processed using a small sluice. Test pitting and sluicing occurred in 2014, no specific work history is known.

Equipment and Water Treatment Equipment noted during 2013 included a small backhoe and bulldozer. A small water pump (<2") was used to obtain water from Moose Brook Creek and no discharge into Moose Brook Creek was noted.

Surficial Geology and Stratigraphy Not reported.

Bedrock Geology Bedrock is greenstone and metabasite (Wheeler, 1961).

Gold Characteristics Not reported.

Unnamed, a tributary of Tarfu Lake

105C/04 2014: 60°01'17"N, 133°40'30"W

Black Mountain Mining, 2010-2014

Water License: N/A

Active Producer (2010-2014) **Operation no. 234**

Location Unnamed tributary south of Tarfu Lake, testing discovery claim 5.2 km from the unnamed tributary confluence with Tarfu Lake.

Work History and Mining Cuts Mr. Guidolin mined his discovery claim in 2011 and focused testing on a glaciofluvial bar deposit. Throughout the season he processed approximately 153 m^3 (200 yd^3) during ten sluicing days. From 2012 to 2014 systematic testing and small-scale mining occurred on the discovery claim. Exploration, consisting of hand pitting, was initiated on a higher elevation channel south of the discovery claim.

Equipment and Water Treatment Equipment used in 2011 included a Kubota KX121-3 excavator to mine and feed the wash plant. In 2013 a Caterpillar 304 excavator replaced the Kubota for mining and feeding the plant. The wash plant screened to 1" minus which fed onto an upper 4 by 7 ft sluice run with 3/4" riffles and further fed a section with 5 point expanded metal and split the sluice material into two 2 by 10 ft runs with 3/4" riffles, expanded metal and nomad matting. The plant used 900 gpm and is capable of processing 30 yd^3 (23 m^3) of gravel per hour. Water was acquired from the neighboring beaver pond.

Surficial Geology and Stratigraphy The placer deposit on the unnamed creek is located in a glaciofluvial meltwater channel, formed during the recession of the last glaciation. Activity in 2011 was present where the meltwater flow velocity appears to have reduced due to topographic change and where the channel becomes less confined and forms a fan like feature. A glaciofluvial bar tested in 2011 has a positive relief of 1 m (3.3 ft) and very coarse boulder gravel present at depth. The bar deposit geology consists of bedrock (siltstone and chert) from 0 to 0.5 m (0 to 1.6 ft), a silt/clay layer from 0.5 to 0.75 m (1.6 to 2.5 ft), a pebble gravel from 0.75 to 1 m (2.5 to 3.3 ft), a boulder gravel 1 to 2 m (3.3 to 6.6 ft), and a cobble-pebble gravel unit with minor boulders from 2 to 3.5 m (6.6 to 11.5 ft). All of the gravel units are typically sluiced.

Bedrock Geology Bedrock is chert-siltstone.

Gold Characteristics Gold is 40 to 60 mesh and has a subrounded and subangular shape. Gold acquired from testing the higher channel is coarser than the discovery claim with the bulk of the gold grains less than 10 mesh.

Becker, a tributary of Wheaton

105D/03 2013: 60°13'26"N, 135°10'36"W

Wold, B., 2010-2014

Water License: N/A

Active Producer (2010-2014) **Operation no. 235**

Location Becker Creek, 980 m upstream from its confluence with Wheaton River.

Work History and Mining Cuts Mr. Wold was actively hand mining from 2010 to 2013 and completed two major test pits and numerous smaller pits throughout the seasons. The first pit was 3.6 by 1.8 by 1.5 m (12 by 6 by 5 ft deep) and the second 1.8 by 2.7 by 1.2 m (6 by 9 by 4 ft deep). In 2014, Mr. Wold excavated 10 yd from a 2013 pit, and sluiced a total of 8 yd.

Equipment and Water Treatment Mining was performed using hand tools (pick and shovel) and material was transported in 2.5 US gal pails and wheelbarrow. Material was processed through a homebuilt zig zag screening plant with 2 sluice runs. A mucking bin fed a 1" screen, then 1/4"

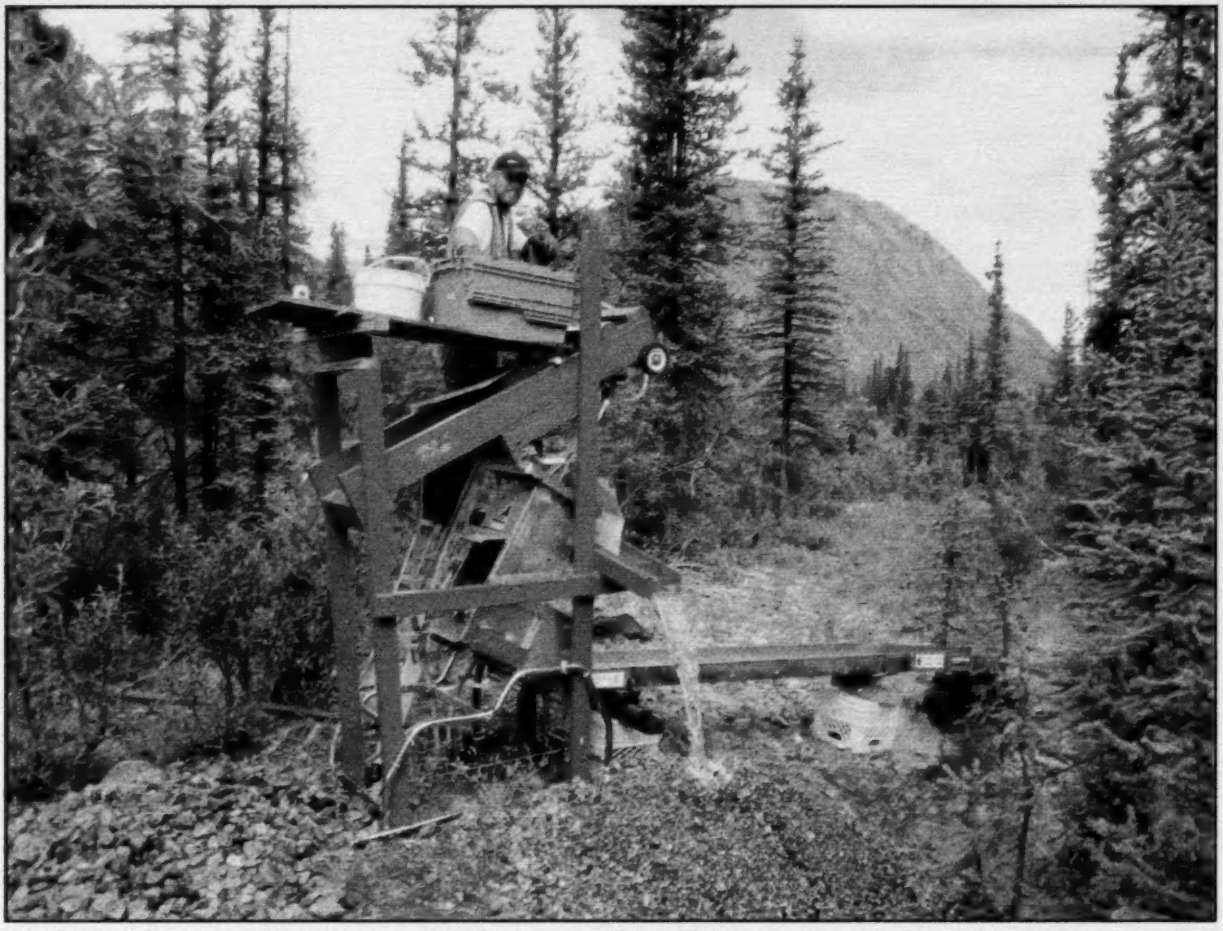
Black Mountain Mining's wash plant and former test pit now used as a settling pond in 2011.

screen with material between 1" and 1/4" sluiced in a 6 by 36" side sluice with 20" of 1½" expanded metal and nomad matting. Sub 1/4" material was sluiced in a 12 by 96" sluice run with 74" of 1" expanded metal on nomad matting, reducing to a Keen A52 hand sluice with factory riffles on nomad matting. The wash plant was able to process 0.5 loose cubic yards (0.4 m^3) of gravel per hour, supplied with water at 114 igpm with a 2" Honda120 4HP pump powered by a gasoline engine. Effluent was settled out of stream and not recycled. Clean-ups were completed after every four hours of sluicing and further concentrated using a gold bowl/Vortex concentrator and gold pan.

Surficial Geology and Stratigraphy The exposed section included a maximum of 0.15 m (0.5 ft) of overburden and 1.5 m (5 ft) of cobble dominated gravel with large boulders present below 0.6 m (2 ft). Mining occurred 3.0 m (10 ft) above the modern creek bed with bedrock depth unknown. All gravel was sluiced.

Bedrock Geology Bedrock is biotite-muscovite-quartz-schist, garnet-quartzite, and calcite-biotite-orthogneiss (Hart and Radloff, 1990).

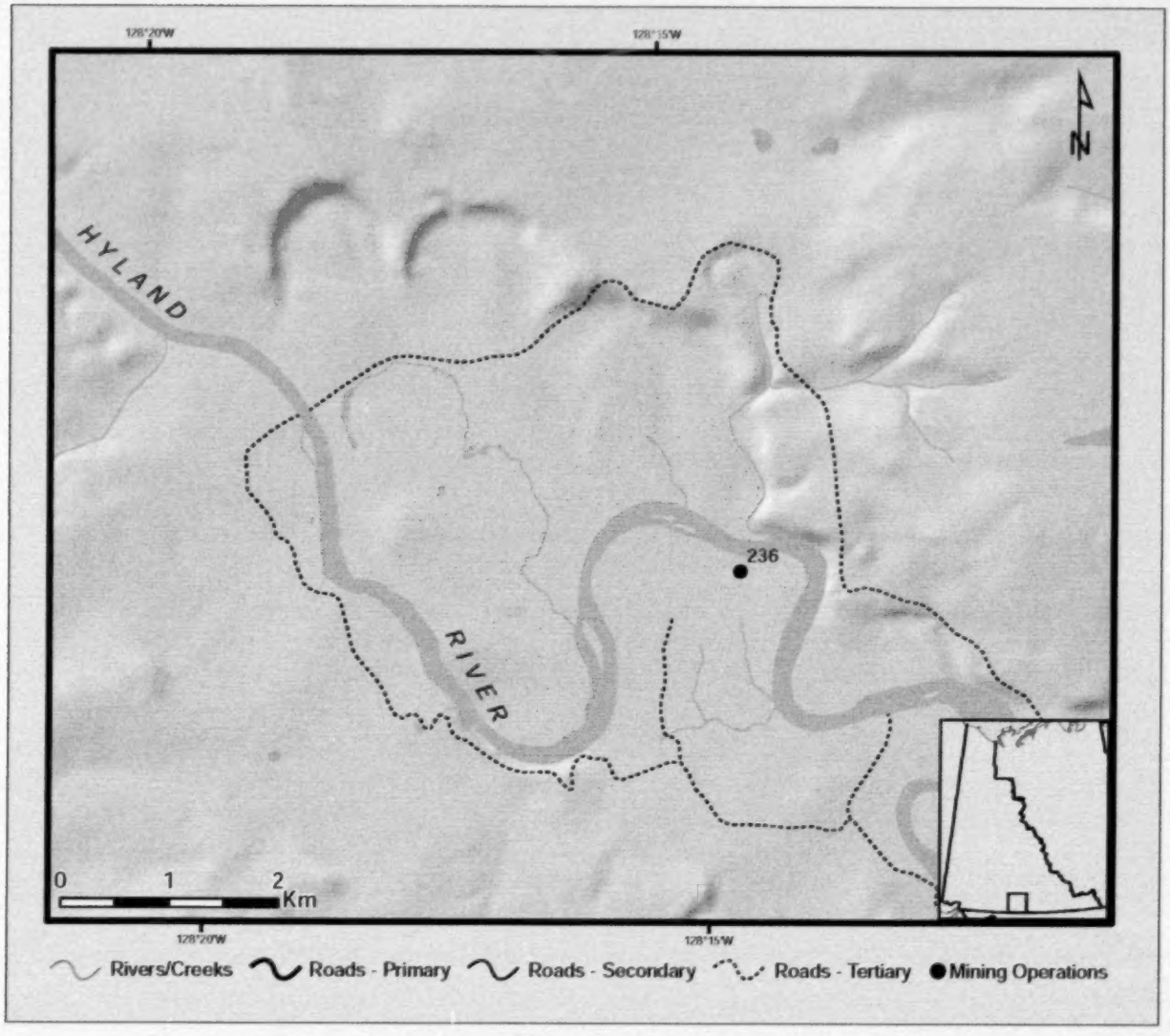
Gold Characteristics Gold is very fine to small flakes, brilliant, and appears fairly thick and angular under a microscope. Significant nuggets have yet to be found.



Mr. Wold on his claims at Becker Creek in 2013 (Photo credit: Bryce Wold).

WATSON PLACER AREA

SITE 236



LEGEND

236 ..... Hy Grade Ventures Inc.

HYLAND, A TRIBUTARY OF LIARD RIVER

105A/01 2014: 60°02'10"N, 128°14'28"W

Hy-Grade Ventures Inc., 2007-2014

Water License: PM06-537 (Active 2017)
Active Producer (2010-2014) **Operation no. 236**

LOCATION Hyland River.

WORK HISTORY AND MINING CUTS Exploration has occurred under PM06-537, on the right limit, since 2007. To date, Hy-Grade Ventures has only dug test pits on the property.

EQUIPMENT AND WATER TREATMENT Equipment included an excavator and bulldozer.

SURFICIAL GEOLOGY AND STRATIGRAPHY Not reported.

BEDROCK GEOLOGY Bedrock is unknown.

GOLD CHARACTERISTICS Not reported.

Southern view towards Hy-Grade Ventures Inc. property on the right limit of Hyland River (Photo credit: Justin Hooper).

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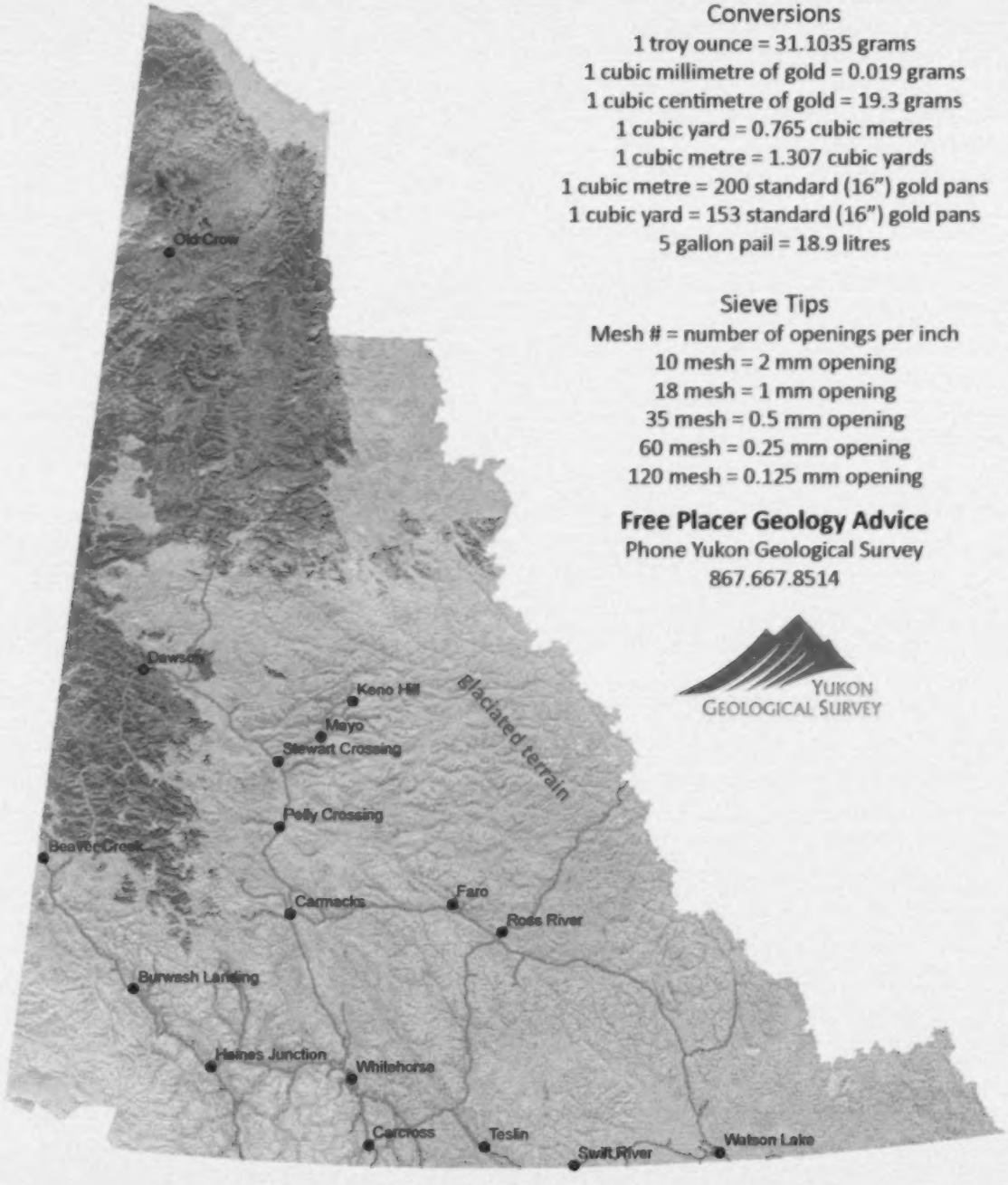


Conversions

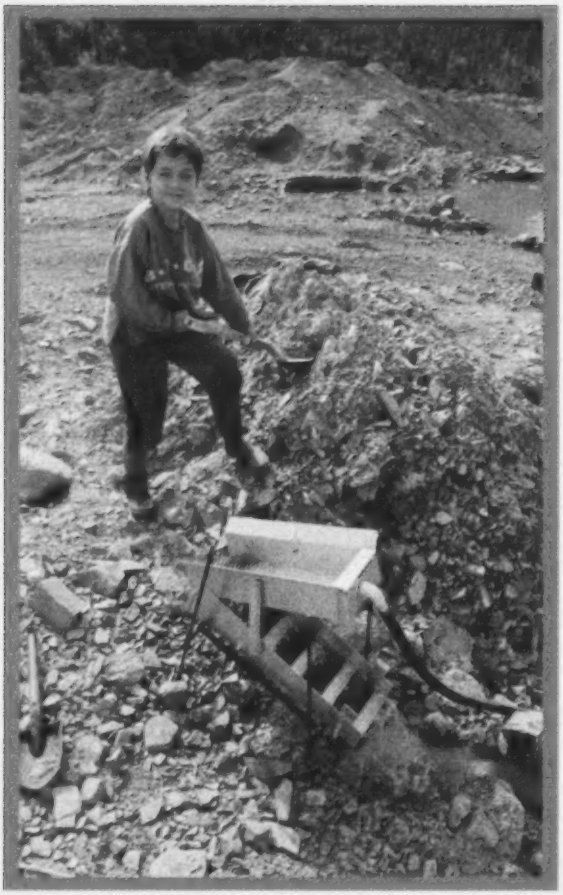
1 troy ounce = 31.1035 grams
1 cubic millimetre of gold = 0.019 grams
1 cubic centimetre of gold = 19.3 grams
1 cubic yard = 0.765 cubic metres
1 cubic metre = 1.307 cubic yards
1 cubic metre = 200 standard (16") gold pans
1 cubic yard = 153 standard (16") gold pans
5 gallon pail = 18.9 litres

Sieve Tips

Mesh # = number of openings per inch
10 mesh = 2 mm opening
18 mesh = 1 mm opening
35 mesh = 0.5 mm opening
60 mesh = 0.25 mm opening
120 mesh = 0.125 mm opening

Free Placer Geology Advice

Phone Yukon Geological Survey
867.667.8514

YUKON GEOLOGICAL SURVEY

Glacial limits map of Yukon (after Duk-Rodkin, 1999)